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An Address

ON

THE EPIDEMIOLOGY AND PATHOLOGY OF POLIOMYELITIS.

DELIVERED BEFORE THE PORTSMOUTH DIVISION OF THE BRITISH MEDICAL ASSOCIATION,

BY

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PHYSICIAN AND LECTURER IN MEDICINE, ST. GEORGE'S HOSPITAL, LONDON.

THE word "poliomyelitis" nowadays is restricted to the clinical and pathological results of a definite specific infection of the anatomy, though the part invaded may be the brain, the cerebellum, the spinal cord, or the peripheral nerves, or any combination of these structures. The term "polio-encephalitis" is no longer used, nor do we speak of "anterior poliomyelitis," nor of "acute poliomyelitis," nor of "chronic poliomyelitis," but simply of "poliomyelitis," to denote this peculiar specific fever which has the incidence of its effects chiefly upon the nervous system.

This malady has been incident upon humanity since very early times, as the references in classic literature to "he that hath a withered limb" will tell you, or the many portrayals of the deformities produced by the malady in early sculpture and mediaeval paintings will show you, but never until our lifetime has it been known as a pestilence which, affecting one small district, in a few years claimed 50,000 victims; nor as a plague which in three short months could leave behind it 5,000 dead and 12,000 paralysed, as it did in New York State in 1916; nor as a swift scourge which, lighting upon the little village of Stoke Rivers in Devonshire, could lay low in a few days 45 persons out of a total population of 119.

These events are new to the world of medicine in which we have lived, for when I joined our profession poliomyelitis was not described as an infectious disease, though an epidemic of 11 cases in one village had been recorded as early as 1843 by Colmar. There were other small community outbreaks in my early years, but it was an outbreak of 1,500 cases in Sweden in 1905 which led to the most important discoveries upon the nature of poliomyelitis. On account of the geographical nature of Sweden and the distribution of its population in small village communities with few lines of communication, the spread of the infection was comparatively easy to trace, and Wickman, who investigated this epidemic, was able to prove that the disease only travelled along the lines of human communication, that it would not cross from village to village over a ravine, even though these villages were only a hundred yards apart, unless there was a road or a bridge or a boat by which human beings could pass. Moreover, he proved that whenever infection spread to a fresh village, someone had visited that village from a definitely infected village. That person was obviously one who was not sick with the disease, nor was he one who subsequently became affected.

Wickman therefore proved the very important facts that poliomyelitis is conveyed by human contact only, and usually by those who do not suffer with symptoms of the malady. He proved the importance of carrier infection. Wickman made very important clinical observations as well. He found eight different types of illness with nervous symptoms common during this epidemic, in addition to many cases of fever in which there were no nervous symptoms. Some of these were very unlike the usually accepted clinical picture of poliomyelitis. Many years before, however, Strumpell and others had stated their belief that acute encephalitis was really poliomyelitis affecting the brain, and Wickman boldly asserted that all the dissimilar illnesses observed by him in the Swedish epidemic were manifestations of one and the same infection; and his assertion was before very long a proved fact. He had able pathologists to help him, and with the advent of the American epidemics great advance was made by Landsteiner and Popper, by Flexner and Lewis, by Taylor and Amos, and by Levaditi.

These workers have succeeded in infecting monkeys with the disease by means of emulsions of the spinal cord from a fatal case, and by means of washings from the naso-pharynx of any person recently ill with the disease. The infection can be attained by injecting the virus subcutaneously, or into any of the serous cavities, or into a nerve trunk, and most certainly of all into the central nervous system; but, curiously, intravenous injection will never produce the disease, for the blood seems to destroy the virus at once. They also communicated the disease by smearing the virus on any of the mucous surfaces, or rubbing it upon the fingers of the monkey or upon the bars of his cage so that he could contaminate his own mucous membranes. The malady can be propagated through an endless strain of monkeys, with the production in each of a fatal disease commencing with pyrexia and general illness and terminating with paralysis. Very nearly the same changes are found *post mortem* as are found in human cases, so that the clinical and histological picture in man and in the monkey may be said to be identical.

Investigating all the members of a household in which there was a case of poliomyelitis in the acute stage, Kling, Pettersen, and Wernstedt found that they could obtain the virus from the nasopharynges of 30 per cent. of the non-affected inmates, and therefore proved the important fact that there are always three other people who carry, and are therefore able to transmit the malady, for every one who suffers. As I shall try to prove, the disease is never transmitted by the one who is suffering from it, but only by the carriers; this has a very wide bearing when dealing with the malady from a public health point of view.

The virus of poliomyelitis thus obtained resists desiccation for twenty-four days, and a mixture of 50 per cent. glycerin, which kills most bacteria, has no effect whatever upon its potency, and advantage is taken of this fact to prepare the virus uncontaminated. Nor is it affected by 5 per cent. carbolic acid; but it is instantly rendered impotent by hydrogen peroxide or by a 1 per cent. solution of permanganate. The virus will pass through two inches of solid porcelain under pressure, which proves that, if particulate, the organism is very small. It is therefore known as a "filter passer." But if this virus is passed again and again through a fresh porcelain filter it becomes less and less potent with each passage, which suggests that the virus is particulate and only just small enough to pass with difficulty the pores of the filter. Actually the organism is said to be a very small round thing, which has been called a globoid, of which fifty would lie easily on the surface of a red blood corpuscle. It is claimed that this globoid virus can be cultivated upon Noguchi's medium—a mixture of peritoneal fluid and rabbit's kidney—and that the globoids can be seen *in situ* in the lesions in every case of poliomyelitis.

This virus is communicated from person to person by "droplet infection," which means that whenever I speak to one of you—say at a yard's distance—I spray you continuously with droplets from the surface of my respiratory passage; and if I am a carrier of poliomyelitis I spray you with the virus, some of which is likely to reach your respiratory mucous membrane when you are inspiring. In this untoward event one of three things must happen to you as the result of your receiving the virus: either (1) you develop the disease, or (2) you become a carrier and capable of handing the infection on to another person, or (3) you become immune relatively or absolutely. Whether you become a case, a carrier, or an immune person will depend, first, upon the dose of the virus which you receive from me per unit of time; secondly, upon your personal power of destroying that virus; and thirdly, upon how quickly the protein content of the virus stimulates or depresses your immunizing mechanism. These two last factors being of average intensity the result will depend upon how far I am from you when I spray you with the virus.

Now if a person develops the disease, the virus which is multiplying upon his respiratory mucous membrane seems at once to lose its virulence, so that a case of poliomyelitis does not seem able to convey the infection to another

person, though the virus may be still found upon the mucous surfaces for about a fortnight.

If a person becomes a carrier the virus is likely to become more virulent for a time, but soon it loses its potency and the person ceases to be a carrier in a fortnight or so. There are no chronic carriers as there are in connexion with diphtheria and epidemic meningitis.

It seems, then, to be a recent carrier who transmits and spreads the disease, and a chain of carriers who carry on the infection during those times when poliomyelitis is not about and give rise occasionally to those cases of poliomyelitis which are called the "sporadic cases," as distinguished from the "epidemic cases."

I want it very clearly to be apprehended that though the virus can be obtained from the mucous membrane of cases for some days after the disease has appeared, and monkeys can be inoculated with the disease from this virus, that does not mean for one moment that a patient even in the early days of his illness can deliver an infective dose of the virus to another person. There is strong evidence that a case of poliomyelitis is not infectious, and that a carrier, especially a recent carrier, may be very infectious. As this question as to whether poliomyelitis is infectious from case to case, or not, is one of paramount importance, I will state the evidence briefly. Let me in the first place give the story of a carrier. One day at the market town a farmer from a country village sold a horse to another farmer who lived some twenty miles away, and as part of his contract had to deliver the horse at the farm of the purchaser. He started from home leaving his child ill with poliomyelitis. He took the midday meal with the purchaser and sat between two of the children at table. Within forty-eight hours both of these children were ill with poliomyelitis and a few days later their mother and another child were stricken with the disease. Here were four members of one household stricken by one short visit of a carrier, with no possible source of infection from elsewhere. Probably, too, this father had infected his own child, for adults are often carriers.

Such instances as the story of the farmer just recited could be multiplied indefinitely—the Swedish epidemics teemed with them. But when we come to seek for evidence of case-to-case infection we have to search the literature carefully for any event put forward as an example. And when the few recorded instances are examined it is found in every case that it is one child of a household who is said to have infected other members of the household or other contacts, and we know full well that whenever a case of poliomyelitis appears, and as soon as it appears, 30 per cent. of the members of that household are already carriers and provedly capable of infecting; and in any case it is at least three chances to one against the sufferer from poliomyelitis being the infector of others, even if he were capable of infecting, which I submit he is not.

The only real test that would prove a developed case to be capable of infecting others would be to remove the patient in the early pyrexial stage and place him in a community of susceptibles. Put him in the children's ward of a hospital and see what happens. I have seen this done, as all of you have seen it done, on scores of occasions since we first entered hospital, yet there is not one single record in the whole of medical literature of such a patient transmitting the disease to another child in hospital. Dr. Batten, who had thirty years' experience of the Great Ormond Street Hospital for Sick Children, went into this point very carefully in the Lumleian Lectures for 1916, and vouched that no case had ever occurred in that hospital, where acute cases of poliomyelitis were frequently admitted into the general wards. I think that this evidence is very conclusive, but I know how difficult it is to get the public to accept it. In the lay mind one case of infectious disease must always arise from another similar case, and in deference to such an opinion it is wiser to isolate patients.

I would like to submit to you my opinion that when an epidemic of poliomyelitis occurs in a community it is preceded by a carrier epidemic in which for a time no cases occur but many carriers are made, and that, with the increasing advent of carrier infection to susceptibles, the virulence of the infection is raised and at last definite cases occur. By this time the infection is all through the community, and doubtless much immunization has already occurred. This is probably the reason why poliomyelitis seems in its epidemic form to avoid schools, institutions, and towns, and densely populated districts where there is much daily mixing of the community, and to prefer sparsely populated country districts, where communication between house and house and from village to village is more restricted. It seems to me to be the only explanation of the occurrence of the first fifteen cases in an epidemic on the same day in fifteen widely separated places of one countryside, as happened in one of the English epidemics. Such a preceding carrier epidemic best explains the curve of incidence in an epidemic, with its rapid blaze, high peak, and rapid fall, all the cases occurring within a few days and then no more cases. All the cases at Broadstairs, for example, occurred between October 13th and November 9th, and there were many more cases among the general population than in the schools.

Now if this description which I have put forward is just it follows that when a case of poliomyelitis occurs in a semi-isolated community such as a school which has been assembled, say, for several weeks, there has already been a carrier outbreak going on for some time, and all the boys are already infected as cases or carriers or they are immune. The actual cases are not infectious, and all the damage that can be done has been done so far as the boys are concerned. Therefore keep them together, and the epidemic will die out with no further trouble than would have occurred in any case. But before the epidemic has died out do not disband the carriers, by whom alone infection can be spread, and scatter them over the country for the continuance of the disease.

The virus of poliomyelitis has never been found except upon the mucous surfaces or within the nervous system. It has been proved to be capable of passing through the whole length of the intestine with undiminished potency, and therefore any part of the respiratory and alimentary mucosa may be the point of advent of the poison to the nervous system, and it seems likely that the point of advent may determine which part of the nervous system is chiefly attacked. When once within the nervous system the virus seems to travel fairly readily.

It follows from these facts, and from the fact that the blood stream will not convey the virus but seems to destroy it at once, that the general swelling and parenchymatous degeneration which is found in the lymphoid tissue of the body generally, and in the liver and spleen, must be the result of some toxin produced by the virus.

The virus gains access to the nervous system by one path only, and that is by travelling along the nerves, either along the perineural lymphatics or along the axon, just as the virus of rabies does or as do the toxins of tetanus and diphtheria. It has recently been proved that the path is by the anterior roots only—there seems to be a trap at the posterior root ganglia which prevents access by the posterior roots; for if the anterior roots be divided injection of any of these poisons into the corresponding nerve is not followed by infection, whereas if the posterior root be divided infection takes place as in the intact animal. This may be the explanation why the damage in poliomyelitis falls most heavily upon the ventral horns of the spinal cord, which are in close connexion with the anterior roots.

The effect of the virus upon the nervous system is two-fold. First there is a poisoning of the nerve elements which destroys their function. This poisoning may be recovered from, or it may end in degeneration of the nerve element. It is the recovery from such a poisoning effect which is responsible for the rapid clearing up of the paralysis, or of part of the paralysis, which one so often sees in the first week or two of the illness. Secondly, there is a local inflammatory reaction, often so intense as to lead to actual necrosis of the affected region and frequently associated with many small haemorrhages. The actual inflammatory process is the outpouring of lymphocytes in very large numbers round the blood vessels with marked oedema of the tissues, and, so far, it is exactly like the lesion of lethargic encephalitis and the lesion of syphilis, but in poliomyelitis there is always a considerable number

of polymorph cells mixed with the lymphocytes, which will at once distinguish this lesion from that of syphilis and lethargic encephalitis.

Whenever the inflammatory lesion reaches the surface of the nervous system and the meninges there will be outpouring of cells into the cerebro-spinal fluid and a recognizable change in this fluid, immensely important in diagnosis, together with signs of meningitis. Now as meningitic symptoms, such as headache, head retraction, diplopia, nystagmus, vomiting, and pains in the back and limbs with pyrexia, are among the commonest of symptoms of all cases of poliomyelitis, especially when this disease is epidemic, it will interest you to know that from the first symptom of the disease the cerebro-spinal fluid of poliomyelitis is highly characteristic, and that a lumbar puncture will not only relieve the headache and pains and possibly lessen the severity of the disease, but it will help you to a diagnosis in at least 98 per cent. of the cases. There is an increase in the protein content, and often a fine spider-web clot forms on standing for a few moments. The chlorides are normal: this will at once distinguish it from tuberculous meningitis, in which the chlorides are characteristically subnormal. The sugar is normal: this will at once distinguish it from all forms of bacterial meningitis, for in every one of these the sugar is below normal. There is an increase in the cells, which may be lymphocytes or polymorphs or both. The culture is sterile.

There is only one other acute pyrexial disease which gives a fluid sometimes like this, and that is lethargic encephalitis, but I wish you especially to remember that the polymorph cells are never found in the cerebro-spinal fluid of lethargic encephalitis, and when these are present the diagnosis must be that of poliomyelitis.

CONGENITAL IDIOPATHIC DILATATION OF THE COLON TREATED BY STRETCHING OF THE PELVI-RECTAL SPHINCTER.

BY

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CONGENITAL idiopathic dilatation of the colon (Hirschsprung's disease or megalocolon) is described in textbooks as an enormous dilatation of the colon with hypertrophy of its walls, affecting all or part of the large intestine. The parts most frequently affected are the descending, iliac, and pelvic colons.

The object of the present note is to advocate the trial of a method of treatment which aims at dealing with the cause. L. E. Barrington-Ward[1] in 1914 gave a full account of the disease and supplied a list of thirteen different views as to its causation, under the headings of "Mechanical," "Neuropathic," "Inflammatory," and "Congenital." He referred to *post-mortem* examinations made at Great Ormond Street Children's Hospital on nineteen undoubted cases, in all of which the sigmoid colon was hypertrophied. In ten of these cases the hypertrophy also involved the rectum as far down as the anal canal. In no case was any mechanical obstruction to be found, though in one the bowel was said to be kinked as it turned into the pelvis. After discussing the various theories he states:

> "The theory that best explains this series of cases is as follows: There is a congenital abnormality in the lower end of the hind gut which takes the form of a muscular hyperplasia. It usually involves the rectum and extends for a varying distance up the pelvic and iliac colon. . . . In some cases there is definite localization of the change (as in three cases described) where the hyperplasia has affected a segment of the intestine chiefly. . . . The physiological functions of the intestine are in abeyance, a block is produced, and the bowel behind, for a varying distance . . . dilates and hypertrophies."

A. F. Hurst[2] believes that this affection is due to achalasia, or absence of the normal relaxation of the circular muscular fibres found at the pelvi-rectal flexure, or of the anal sphincter. He holds that there is a close similarity between what is known as cardiospasm (or, as he terms it, achalasia of the cardia) and megalocolon.

A. J. Walton,[3] in discussing the surgical treatment of cardiospasm, describes fourteen cases in which he adopted the method suggested by Mikuliez—that is, opening the stomach and digitally stretching the lower constricted portion of the oesophagus. The result in these fourteen cases was entirely satisfactory.

THE PELVI-RECTAL SPHINCTER.

The lower part of the large bowel consists functionally of two parts, a colic part and a rectal part, and between these there is a functional junction. In the dead body, hardened with carbolic acid and formalin, the functional tract shows considerable variety in form and appearance. As a rule, however, it is a definitely contracted region of the bowel, always empty, and in strong contrast with the part above, and, to a less degree, with the part below.

Under normal conditions the faeces do not at once pass through this tract, but collect in the movable pelvic colon above until just before defaecation, when they are discharged into the fixed rectum below. Between the two parts there is an angulation, especially in the erect position. W. J. Mayo[4] has shown that the mucous membrane of the last two inches of the colon is disposed in longitudinal folds, contrasting with the circular arrangement in the rest of the colon. This favours the suggestion that the segment referred to is normally obliterated by a sphincteric action of its circular muscular fibres. A similar arrangement is seen in the abdominal portion of the oesophagus, and in the pyloric end of the stomach.

It has not yet been shown that there is developed in the pelvi-rectal tract a sphincter comparable with that found at the pylorus, but over its whole length, which varies from half an inch to two inches, it is believed that there is a sphincteric action of the circular muscular fibres sufficient to obliterate the lumen and to withstand the weight of the contents above. The lumen becomes patent when the circular muscular fibres of this tract relax. Interest is being taken in this matter at Queen's University, and Professor Walmsley believes it is possible to demonstrate a more definite sphincter in the foetus.

Recently I had the opportunity of examining the rectum of a woman, aged 28, in whom I had, six months previously, excised the entire colon with a few inches of the terminal ileum, for multiple papillomata of the former. The junction of the ileum with the lower bowel was made about eight inches from the anus—that is, well above the pelvi-rectal tract. I expected in this patient that the rectum would be full of liquid faeces, but it was empty, and it was only on passing a sigmoidoscope some distance up that semifluid faeces began to escape. The presence of an efficient pelvi-rectal sphincter may be assumed in this case. The patient can retain faeces for many hours at a time, the bowels acting from two to five times in the twenty-four hours.

TREATMENT OF MEGALOCOLON.

Medical.

By means of enemata, massage of the colon, liquid paraffin, and aperients, a certain proportion of cases may be benefited, but the mortality is very large, some authors placing it as high as 74 per cent.

Surgical.

Barrington-Ward, in the paper referred to, thinks that a fair estimate of the surgical mortality would be about 36 per cent. He considers that the ideal form of treatment is the removal of the whole of the affected bowel down to the anus. He advocates, in young children, operation in two stages. At the first operation the ileum is divided and implanted as low down in the rectum as possible. Some months later, when the child's strength has increased, the large bowel above the anastomosis is excised. Treatment on these lines has been carried out by Arbuthnot Lane and others with success.

An operation of the magnitude of colectomy in a debilitated child, even if performed in two stages, is a terribly severe measure, and would undoubtedly, if universally adopted, be attended with a high rate of mortality. Moreover, it seems unscientific and incorrect to remove a hypertrophied organ striving to overcome an obstruction, instead of seeking out and dealing, if possible, with the cause.

If Hurst is correct in his assumption that the block in this disease is due to pelvi-rectal or anal achalasia, stretching of the pelvi-rectal sphincter, and, less obviously, of the anal sphincter, ought to relieve the obstruction, just as stretching of the cardiac sphincter has relieved the obstruction in so-called idiopathic dilatation of the oesophagus, or cardiospasm. The following case seems to support this contention.

A boy, aged 2 years and 4 months, was admitted to the wards of the Belfast Hospital for Sick Children, under the care of my colleague Dr. Leathem, on November 11th, 1926, with the following history. He had been breast-fed, but from birth had been constipated, and from the age of 9 months the constipation had become more troublesome. Enemata, paraffin, and other measures were required to secure an action of the bowels. Gradually the abdomen became more and more distended, and the child had recently begun to lose colour and weight. For two days before admission he had complained of abdominal pain, which was attended with persistent vomiting.

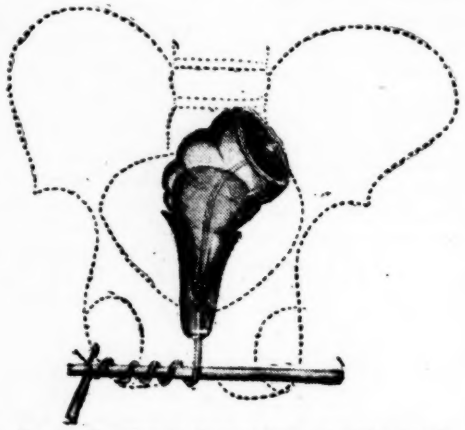

FIG. 1.—Drawing to show position of rubber bag in bowel and situation of pelvi-rectal sphincter.

Condition on Admission.

The child was pale and drowsy, and vomited dark coffee-ground material at short intervals. The abdomen was much distended, and measured 32½ inches in circumference at the level of the umbilicus. Peristaltic waves were visible, and a "ladder pattern" could be produced by abdominal palpation. Pain came on in spasms, and was associated with a desire to vomit. The distension involved the whole area of the abdomen, which was tympanitic on percussion. I saw the child on November 15th, at the request of Dr. Leathem, who was very much opposed to the adoption of any heroic surgical measures. Examination by the finger of the anus, the anal canal, and the lower part of the rectum disclosed no abnormality, but about the level of the sacral promontory the examining finger encountered an encircling band, apparently about a quarter of an inch in breadth, constricting the bowel.

Operation.

The child was immediately anaesthetized, and, as a preliminary, the sphincter ani was gradually and carefully stretched. When this had been accomplished the index finger was inserted into the narrowed area just mentioned, and pushed up so as to dilate the constriction. The middle finger was then also introduced, and further stretching was effected. Finally, both index fingers were inserted until the last phalanx of each rested above the band, and by pulling upon the latter the upper bowel was partially invaginated into the lower. It was now possible to separate the fingers and dilate more widely still. Great care was taken during these manipulations to avoid rupture of muscle or damage to mucous membrane.

FIG. 2.—X-ray photograph of dilating bag in position.

After-History.

The child was put back to bed, and during the next twenty-four hours large quantities of faecal matter were brought away by enemata. Vomiting ceased at once, and the child became quite comfortable. The enemata were continued with success, and the child was again examined under an anaesthetic on November 27th, twelve days after the first examination. It was now possible to pass a sigmoidoscope right up into the pelvic colon, where it could be felt on abdominal palpation. The mucous membrane of the bowel was red and inflamed, but no accumulation of faeces was seen.

Introduction of Dilating Bag.

To maintain the dilatation already effected a pear-shaped rubber bag, with a diameter of one and a half inches at its broadest part, was inserted and passed beyond the band, which was still palpable. The bag was then distended with water, and the tube leading from its narrow end was wound spirally round a glass rod laid across the child's buttocks, and fixed in position. (See Fig. 1.) The nurse was instructed to rotate the glass rod at intervals so as to increase the tension of the rubber tube, and thus maintain steady pressure on the constricted portion of bowel. When the bag was in position a finger was introduced into the rectum, and it was found that a slight degree of invagination of the upper bowel into the lower was being produced by the drag on the rubber bag. This is shown in Fig. 1. Later, the water in the bag was replaced by sodium iodide solution, and an *x*-ray photograph was taken. The skiagram (Fig. 2) shows the position of the bag in the pelvis, the site of the constriction being indicated by an indentation below the broad end. The drawing in Fig. 1 is intended to be a reconstruction of the parts, from the *x*-ray photograph. The bag is represented as lying in the bowel, and the position of the constriction is shown. The bag was passed spontaneously twenty-four hours after its insertion. An opaque enema was given on December 16th—that is, about a month after operation—and the *x*-ray photograph shows the enormous dilatation of the colon, the anal canal, and what appears to be the site of the pelvi-rectal sphincter. (Fig. 3.) A further stretching was carried out on January 22nd, 1927, as a precautionary measure.

The subsequent progress of the case has been extremely gratifying. The circumference of the abdomen has been reduced from 32½ in. to 18½ in., though it varies a little from time to time. The bowels respond well to aperients and enemata, and frequently act without assistance. The abdomen appears normal on inspection. The thickened colon can, however, be palpated along its entire length, and can be felt to contract, especially after massage. The patient's condition is excellent. He has put on weight, his appetite is good, and his colour is that of a healthy boy. He was discharged from hospital on February 5th, not quite three months after admission, having been detained longer than was necessary, in order that his progress might be followed. He is now (April 16th) in perfect health, and his bowels act daily without aperients.

FIG. 3.—X-ray photograph after an opaque enema (taken a month after operating).

SUMMARY.

This case concerns a boy, aged 2 years and 4 months, with typical Hirschsprung's disease.

Treatment was carried out on the hypothesis that there was achalasia of the pelvi-rectal sphincter. The treatment consisted in stretching the sphincter ani and the pelvi-rectal sphincter.

The result up to date has been satisfactory. It is suggested that this line of treatment might be tried before resorting to grave surgical procedures. Should it be impossible to reach the sphincter from the anus an attempt might be made after laparotomy to stretch or divide the contracted muscular fibres from the abdomen.

My thanks are due to Professor Walmsley for the description of the pelvi-rectal sphincter, to Miss Rea for the drawing, to Dr. M. Robinson, house-surgeon at the hospital, for his notes of the case, and to the *x*-ray department of the Royal Victoria Hospital for its help and interest in the case.

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TESTING FOR OCCULT BLOOD IN FAECES.

A STUDY OF ALLEGED FALLACIES.

BY

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THE great clinical value of a reliable test for occult blood in the faeces is generally recognized, but there is divergence of opinion as to what constitutes a reliable result. A number of fallacies have been alleged to occur, the chief among them being due to diet, and until comparatively recently it was generally accepted that the tests were valueless unless performed under special conditions.

The great majority of British observers still hold this view. Coope,[1] Hurst,[2] Beaumont and Dodds,[3] and others rigidly exclude from the diet all foods containing haemoglobin and chlorophyll for at least three days before the test, affirming that without such a precaution the tests are valueless. A notable exception to this is Maclean,[4] who states categorically that such precautions are not at all necessary. No investigations of the question are, however, quoted by these authorities. Abrahams[11] found that it was necessary to take 1 c.cm. of blood by the mouth before any reaction was produced in the stools, on a diet free from haemoglobin and chlorophyll. This observation was the result of personal experiments carried out by himself and his assistant; it is quoted by Bennett,[5] who nevertheless also holds the view that the diet must be rigidly controlled.

On the Continent, and especially in Germany, the problem has been studied on a more experimental basis. Koopman[6] and Gregersen,[7] after performing a great many tests, expressed the opinion that the pyramidon and benzidine tests as generally used are too delicate, giving a positive result where no pathological amount of blood is present, and Gregersen recommends a 0.5 per cent. solution of benzidine as likely to give more reliable results. He states that less than 1 in 3,000 to 1 in 20,000 of blood in the stools cannot be considered pathological. Gregersen and Adler,[8] working independently, found that none of the non-meat foods, tested *in vitro*, gave a positive reaction, and Gregersen maintains that contamination in preparation alone is responsible for a reaction with foods containing chlorophyll. Boas,[9] though he recommends the Gregersen test, nevertheless excludes meat, fish, and certain vegetables from the diet—for example, French fried potatoes. In America Aaron[10] has used the Gregersen test, and heartily recommends it. All these writers, however, declare that, in order to obtain a reliable result, meat, and vegetables cooked in such a way as to include the possibility of contamination, must be excluded from the patient's diet for several days before a test. Other alleged fallacies that have been mentioned are bleeding from the gums, the use of hard tooth-brushes, sucking of the teeth, and iron medicines.

The object of the investigation here reported was to inquire into these "fallacies," and to bring the examination of the stools for occult blood within the scope of the busiest general practice equally with the examination of the urine for albumin and sugar. The large number of patients with carcinoma of the stomach first seen by a surgeon or physician at a general hospital in an inoperable condition, and the large number of patients suffering from gastric or duodenal ulcer who are first seen after the calamity of perforation, emphasize the importance of this. It was therefore decided to use only readily applicable chemical tests, and to select from among the many different chemical tests and methods two of the most reliable, in order the more readily to estimate the value of the results obtained. Spectroscopic tests are not well adapted for use in general practice; while, as almost every author uses a different chemical test or method, it was felt that any attempt to include them all and compare results would tend to confuse the issue.

The Tests Used.

Pyramidon.—A "button" of faeces is taken by means of a clean glass rod from the centre of the stool; it is important to take it from the centre, as no risk of contamination in the lower bowel—as from haemorrhoids—must be run. An emulsion is made in 5 c.cm. of distilled water, a few drops of glacial acetic acid added, and the whole boiled. An inch of the cooled emulsion is then taken, and 16 drops of glacial acetic acid added; 1 c.cm. of a 5 per cent. alcoholic solution of pyramidon is poured gently down the side of the tube so as to form a clear layer on the top, and the same amount of hydrogen peroxide added in the same way. A deep blue colour should develop within fifteen seconds if the reaction is positive, and this is the standard used here in judging the results.

Benzidine (Gregersen).—Powders are made up containing 0.2 gram of barium peroxide and 0.025 gram of pure benzidine; if put up in wax papers they will keep indefinitely. Just before the test one powder is dissolved in 5 c.cm. of a freshly prepared solution (50 per cent.) of acetic acid. A portion of the faeces is taken as before and smeared on to a clean glass slide, and a few drops of the solution run on to the smear. A blue or blue-green colour develops within a minute if the test is positive, and the reaction is graded according to the depth of the colour and the time it takes to develop. Gregersen recognizes three grades: 1+, a pale blue or green colour within sixty seconds; 2+, a definite pale blue in twelve to fifteen seconds; 3+, deep blue within three seconds. These grades have been adhered to, except that a blue-green colour developing after thirty seconds has been labelled "Faint 1+" and regarded with suspicion.

PRINCIPLE OF THE TESTS.

The principle of these tests rests upon the fact that a colourless substance such as benzidine or pyramidon is oxidized by hydrogen peroxide, with the production of a blue colour, *only* in the presence of a carrier, such as haematin.

First Series.

As a preliminary an investigation of some of the common foods, cooked in the usual way, was carried out. This was not intended as a complete study, but for purposes of reference was thought to be sufficient. The foods used were meat, chicken, fish, egg, potato, cabbage, lettuce, and beef dripping. These were tested after ordinary methods of cooking (boiling, frying, and stewing), and also, in order to test the effect of "contamination in cooking," roasting and pickling in certain cases.

Only two foods cooked in the ordinary way gave any sort of positive result—namely, meat and chicken; and chicken gave no colour with the Gregersen test until after thirty seconds, and so may be disregarded as a source of confusion in the examination of the stools for occult blood. "Contamination in cooking" gave two interesting results, though otherwise negative. These were with meat and pickled herring. Roast beef gave an immediate reaction (3+) with Gregersen's test, as compared with a "2+" reaction with stewed mince, while pickled herring gave an immediate positive, as against completely negative results by other methods of cooking. Fried eggs, and the French fried potatoes, regarded by Boas as a potent source of error, were negative. Both roast meat and pickled herring are "basted" in the oven, the herring afterwards being pickled in vinegar; the basting would appear to have some bearing on the result. In this connexion it is interesting to note that dripping, whether beef or mutton, raw or fried, was negative to both tests. Vinegar is negative, but it is possible that the prolonged treatment with acetic acid, in the case of the pickled herring, may have some bearing on the result.

Second Series: Experiment on a Normal Individual.

A personal experiment was carried out in order to investigate the effect of ordinary articles of diet and certain methods of cooking on tests for occult blood in faeces; I considered myself normal in every way for the purpose in view. The experiment was continued for twelve consecutive days, the specimen being taken first thing each morning. The diet on these days was varied to include as many foods and methods of cooking as possible, the foods including bacon, beef, mutton, chicken, sausage, potatoes, and green vegetables. After three days on ordinary diet an entirely fish diet was taken—the fish being boiled, fried, and pickled—for three days. On the seventh day three ounces of raw meat, minced, was added to the ordinary diet, and on the eighth day two ounces of boiled ox-blood was taken. For the remaining days an ordinary diet, varied as much as possible, was taken, including on one day pickled herring again. The foods were roasted, boiled, fried, stewed, and pickled. All the tests were completely negative up to thirty seconds with Gregersen's method, and only one specimen gave a reaction after thirty seconds. This was on the first day's diet,

when a faint green colour appeared at fifty seconds. This was the only specimen which gave any reaction with the pyramidon also, and that a faint one. The diet on this day was fried bacon, roast meat, green vegetables, boiled potatoes, and fried sausages. "Contamination in cooking" might possibly have been a factor, but on subsequent days this risk was at least as great, especially on those days when pickled herring was taken, which, as stated above, gives an immediate deep blue colour with Gregersen's test. Three ounces of raw meat failed to give a positive result with either test, while the cooked ox-blood, which was taken in amount sufficient to give a definite reaction if uncooked (two ounces), also gave no reaction in the stools.

Thus it seems that meat, and especially underdone meat, may cause a green coloration after thirty seconds with Gregersen's test, and a positive result with the pyramidon test. The important conclusion indicated is that a blue or blue-green colour with Gregersen's test, obtained before thirty seconds, is proof positive of the presence of occult blood in the stools, irrespective of the patient's diet.

Third Series: Investigation of Thirty Pathological Cases.

Thirty pathological cases were investigated, all of the "fallacies" before mentioned being thus included; the cases were thought to be fairly representative of those found in the medical wards of a general hospital. All the tests were repeated.

Teeth-sucking and bleeding on brushing the teeth occurred in practically every case, but in spite of this fourteen out of thirty cases gave a persistently negative result (seven of them on full diet). Seven cases gave a faint coloration after thirty seconds (what has been called the "faint 1+" reaction); nine cases gave more definitely positive results. Of the seven patients who gave the "faint 1+" reaction, in five the diet could not be excluded as a possible cause; but in the two remaining—a case of chorea and a case of acute rheumatic fever—the bleeding could fairly be attributed to the alimentary canal. In the case of chorea the result persisted unchanged after all gum-bleeding had ceased and the diet had been strictly controlled, while in the rheumatic patient, although the diet produced a negative result, this appeared to be due to cessation of bleeding, as a subsequent full diet (roast meat, green vegetables, etc.) failed to reproduce the reaction.

Of the nine patients who gave more definite results, only five were taking any solid food whatever, and in four of these diet restriction produced no alteration in the tests. The fifth, a case of acute rheumatism, gave a "2+" reaction (blue in twelve seconds) and a definite pyramidon reaction; in this case it was unfortunately impossible to obtain a second specimen until too long afterwards to be of any value. The patient was, however, on a diet of boiled chicken and boiled fish, and a reference to the first series of tests will show that boiled fish is negative, while boiled chicken gives no result until after thirty seconds. It is inconceivable that such a diet could produce a stool giving a blue colour in twelve seconds. He had no gum-bleeding or carious teeth, contrary to the usual findings. Two out of the remaining four cases are interesting as illustrating Maclean's[4] contention that milk diet tends rather to cause confusion by checking bleeding. These patients—cases of duodenal ulcer with recent melaena, who had large amounts of occult blood in the faeces—gave a negative result to both tests after four days on milk diet.

Gum-bleeding and Haemoptysis.

It is difficult to assess the importance of these symptoms as fallacies, owing to the variations to which they are liable, but the amount of bleeding should be taken into consideration. Slight bleeding may be discounted, as instanced by one case of Henoch's purpura, where persistently negative results were obtained in the presence of definite gum-bleeding; there were no other haemorrhages in this case, which was in a quiescent phase. In a case of chorea with slight definite gum-bleeding, the faintly positive result was still obtainable seven days after the bleeding had ceased; showing that the bleeding, though obvious clinically, was negligible in the stools. Two cases, one of bronchiectasis with haemoptysis, and the other of ankylostomiasis (*Ancylostoma duodenale*) with gum-bleeding, gave results which it is impossible to exclude as fallacious. In these cases the bleeding was severe.

Iron Medicines.

Two patients with pernicious anaemia, who had been taking iron continuously for over three months, gave persistently negative results. Another case of pernicious anaemia was taking bone marrow, and this seems to illustrate a definite fallacy. The patient died soon afterwards, and at the necropsy no signs whatever of haemorrhage or erosion of the alimentary tract were discovered, although a "3+" reaction was obtained in the stools three days before death.

The Tests Compared.

On comparing the results obtained with each test one cannot fail to be struck with the greater delicacy of the pyramidon reaction. The pyramidon invariably gave a more definite reaction in cases where it was possible to differentiate. The more delicate a test, the less reliable is it for the purposes of clinical diagnosis, as positive results may be obtained where blood is not present in pathological amount. Thus it will be seen that the Gregersen test is the better adapted for clinical purposes.

Summary.

Certain of the common articles of food, cooked in various ways, have been tested; thirty pathological cases on various diets, and exhibiting all the alleged fallacies among them, have been investigated, and a personal experiment has been carried out. The results have been discussed, and the following conclusions have been arrived at:

1. The Gregersen reaction is more reliable than the pyramidon, but blue or blue-green colour must appear within thirty seconds to make the result conclusive.
2. "Basting" seems to have an effect in producing a reaction with foods, but frying has no such effect.
3. Bleeding due to hard tooth-brushes or teeth-sucking, and slight degrees of gum-bleeding and haemoptysis, may be disregarded, although severer degrees of bleeding may cause confusion.
4. Iron medicines produce no "occult blood" reaction in faeces, but the ingestion of red bone marrow is incompatible with a reliable test.
5. A blue or blue-green colour with Gregersen's test, appearing within thirty seconds, is proof positive of the presence of occult blood in the stools irrespective of the patient's diet.
6. Meat in the diet may occasionally cause a faint colour with Gregersen's test after thirty seconds.
7. Occult blood may occasionally be present in the stools of patients suffering from acute rheumatic fever and chorea.
8. A milk diet is liable to cause confusion by checking bleeding.

I wish to thank Dr. J. C. Spence, in whose laboratory the work was carried out, for his encouraging advice and criticism.

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BACTERIAL TOXAEMIA AND CARDIAC PAIN.*

BY

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THE study of cardiac pain suffers, it seems to me, from its existing nomenclature. Eighteenth century names may still serve in the daily routine of practice; but for the purposes of investigation I think we shall do well to make a fresh start, by calling cardiac pain of all sorts simply "cardiac pain," just as we call all abdominal pain simply "abdominal pain," and recording plainly and

*A paper read at an intermediate meeting of the South-Western Branch at Torquay on March 31st, 1927.

precisely the natural history of each case. I shall therefore avoid, as far as possible, the older terminology.

During the past two years I have been surprised by the unusual frequency with which I have met with cases of cardiac pain; and another doctor has, I learn, had a similar experience. Most of these cases have been apparently ordinary enough types of the complaint, in which no unusual cause could reasonably be assigned; but some have been suggestive of an infective factor in their causation, in a way to which I was unaccustomed.

The short series of cases which I am going to place before you consists, first, of five which seem to be due to some epidemic infection, such as we are in the loose habit of calling "influenza"; and secondly, of three cases apparently partly due to bacterial toxaemia of other sorts.

First, then, the possibly epidemic cases.

CASE I.

A professional man, aged 62, had, in the beginning of July, 1925, a severe attack of so-called "gastric influenza," with a good deal of pain. *X*-ray examination excluded ulcer. About mid-July the painful "heartburn" began, as the patient expressed it, to extend to the chest after walking. A walk of even a hundred yards caused retrosternal pain, just like "heartburn," which reached from the epigastrium to the neck, ran out under both clavicles and down both arms to the elbow and under both scapulae. There was no dyspnoea, no faintness, no "sense of impending death"; only the feeling that he must stop. In a few minutes the pain passed off and he could again walk for a short distance, when it returned. He was able to carry on his work, since it involved no great physical effort. About mid-August his heart began to intermit frequently, especially in the later afternoon, when it often dropped one beat in three. Still he went on working, and, with strychnine and an antiseptic stomach mixture, matters slowly improved and the intermissions ceased about October. In a few months the gastric symptoms also ceased, but the disability in walking continued. The diagnosis made was toxic myocarditis. An *x*-ray examination showed the heart to be of normal size, the systolic pulse tension was only 140; an electro-cardiogram indicated only some left-sided preponderance. The urine was normal. The patient had never had syphilis. At 23 there had been a slight attack of subacute rheumatism, which had left no discoverable damage. Before the gastric attack he had been a good walker and there had never been any cardiac disease.

By March, 1926, there had been further improvement, and on going to a bracing seaside place he found that he could walk slowly on the level for about three miles. In June a month's holiday produced additional benefit, and since then progress has been continuous though slow. Throughout this case there has never been any very severe pain.

CASE II.

Another professional man, aged 57, while out walking in May, 1925, was suddenly taken with pain in the chest, just behind the upper part of the sternum, not severe. Two days later, when making an extra effort raising a heavy bar, it came on severely. Next morning he had to go to bed; it began to come on in spasms three or four times a day. It then spread all over the front of the chest and over the abdomen, so that the medical man attending him suspected gall stones. He stayed in bed five or six days, but when he got up again the pain was just the same. On June 20th his own doctor came back and his temperature was found to be up to 100° and even 101.4° at night. This ceased after eight days. The pain was severe enough to require morphine. He was sick once, but that was after morphine. This attack of fever was the only definite proof of an infective process found, but the temperature had not been taken before.

When well enough to go out he found that he could not walk even on the level for 200 yards without being pulled up by pain and having difficulty in returning. *X* rays showed nothing. For weeks there was very little improvement. In September he went to Hastings and found there that he could walk slowly one mile on the level. On returning home he lost ground again. In the summer of 1926 he went to Margate and got much better. He was then able to walk further and to go up hills slowly. On his return home this improvement persisted, and about Christmas last he was very much better. Now he is nearly well, but finds he must not hurry.

Although here we have no such preceding gastric attack, I have put this case next the first one on account of the close resemblance of the heart condition and of the course of the illness. Time only, he says, and change of air have seemed to affect his symptoms.

CASE III.

A nurse, aged 25, was under my care from October, 1925, to February, 1926, with cardiac pain following an attack of coryza and bronchitis called "influenza." She had aortic regurgitation dating from 1911. The pain was retrosternal and to the left of the sternum. At first the temperature was normal, but then became irregularly febrile, rising to 99° to 100° each evening. On November 23rd it touched 103° with a rigor, falling, however, to its usual level next day. Blood cultures were negative. On December 2nd she was given cyllin ℞ 1 in capsule three times a day, which soon brought down the fever. On January 4th it again rose, when the cyllin was increased to ℞ 2 every six hours. The temperature then became normal and stayed so. At the same time the cardiac pain, which had been considerable, sometimes needing morphine, and resisting nitrites, iodides, and salicylates, disappeared.

She went to Torquay and returned well. I saw her again on November 24th, 1926, for a return of the pain, slight but continuous across the sternum at the level of the third rib, and radiating up behind the left ear, behind to the scapula, and down the left arm. Ordinary treatment sufficed, and now she is well and at work.

CASE IV.

A stout lady, aged 64, liable to "rheumatism," came to me last September complaining of pain in her arms, shoulders, and breasts, coming on during walking, especially uphill, almost unbearable, usually in the afternoon. Between the attacks of pain she felt very well. Eight weeks before she had had an attack of "cholecystitis," diagnosed by a very capable man, which cleared up. I found a tender mid-sternum, a much dilated heart, a blood pressure of 240/140, mitral systolic and aortic systolic murmurs; also a septic tooth, which I condemned.

On December 3rd I saw her again, when she had lost her pain. The tooth had come out—"an awful tooth," she said.

I wish here to draw attention both to the preceding abdominal illness and to this tooth.

CASE V.

I only heard of this case, and in no detail, so must not vouch for exactness. I include it to show the experience of another and the quicker recovery of a younger man. It occurred in the summer of 1925. A healthy youngish man had an attack of "gastric influenza," and after it found himself unable to walk a moderate distance without being stopped by pain in his heart. In this case, I am informed, the pain disappeared in a short time—in ten days, I think—leaving him quite able to play his usual golf.

These five cases seemed to me to form part of a sort of epidemic of cardiac pain as well as of other forms of cardiac disturbance, in some cases at least, following some infective condition, generally regarded as "influenza."

The following were associated with other sorts of bacterial toxaemic conditions.

CASE VI.

About Christmas, 1924, a busy professional man, aged 67, began to have attacks of cardiac pain, pretty severe for half an hour in the evening, with a blood pressure of over 200, and, after three of these attacks, was seized suddenly after dinner with an intense pain over the whole front of the chest, especially between the left nipple and clavicle, running down the left arm. Nitrites had no effect, and recourse had to be made to morphine and finally to chloroform. For several days chloroform was used for recurrences. A very irregular pulse was left for six weeks, and when he was allowed out, walking brought on a slighter cardiac pain. He noticed that one of his teeth was loose, and, although it was not causing toothache, he had it removed. It smelt abominably. Within two weeks of its removal the pulse became regular, and he has since had no recurrence of the violent pain. However, walking any distance, especially uphill, still brings on slight pain a little above the left nipple and round his left wrist. This disability is steadily diminishing and is now indeed negligible.

CASE VII.

A boy, who was brought to me with dilated right heart following a bad abscess under a tooth six weeks previously, told me that an uncle had come home from abroad suffering from what was diagnosed as "angina pectoris"—"terrible cramp in his heart," he explained—which he had suffered from for two years, that his teeth had been found septic and put to rights, with the result that the "angina" had ceased and he had been able to resume his duties.

CASE VIII.

A lady, a stout, pale woman of 67, with a satiny skin and slightly dilated heart, who had been short of breath for thirteen years, was lately seized with severe pain behind the upper sternum and "through to the back." Treatment of an ordinary kind remedied matters. But it was found that she had a painful anal fissure and above it a vast accumulation of faeces.

I am well aware that these few cases provide only a very slight picture of what I submit they certainly suggest. But I hope that you will feel that I have not wasted your time in using them, insufficient as they are (1) to draw attention to a factor in the causation of a very serious condition, whose fuller recognition may prove to be of practical use, and (2) to record what I think has been something approaching an epidemic of cardiac pain due to some epidemic toxaemia.

It may be of interest to recall that Arnold of Rugby, whose death from "angina pectoris" is historical, is said by his biographer, Dean Stanley (vol. ii, pp. 270 and 277), to have "been confined to his room for a few days by an attack of feverish illness," which apparently caused "depression" for over a week, three weeks before his fatal attack.

THE TREATMENT OF CARCINOMA BY LEAD COLLOIDS.

BY

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As it has been my experience, and that of many who have been using the later preparations of colloidal lead prepared by the British Colloids Company and others, that considerable reaction has been met with after injection, Mr. Patterson has asked me to state the results obtained with the colloidal iodine preparation[1] with which he has been supplying me for nearly two years. Mr. Patterson has had considerable experience in the preparation of lead colloids with the Liverpool centre.

This preparation has been used by me in some sixty odd cases of malignant disease in St. Mary's Hospital, Mount Vernon Hospital, and also in private. Beyond the first batch of about half a dozen cases none have had any reaction whatsoever, and the reaction in the first cases, we thought, was probably due to some contamination of the preparation, as it had been opened and examined previous to use. Reaction never again followed the use of the colloidal iodine.

The preparation contains 0.2 per cent. of lead in the form of lead iodide. It is intended for intravenous injection, and so it is made isotonic by means of glucose, for sodium chloride would be unsuitable in the presence of lead. It contains, further, a trace of thyroid extract; the exact amount cannot be given, for the dried extract contains a varying proportion of inert matter, but it may be definitely stated to be less than 0.02 per cent. A trace of cresol is added, to act as a preservative, since glucose is present. The addition of the trace of cresol is not regarded as making the preparation sterile; it is sterile, and the cresol is added purely as a precautionary measure.

The usual course is four doses, given at four to five days' interval, with the precautionary tests for the urine, blood, and the liver efficiency, which are insisted upon by the Liverpool centre. I have given three courses at intervals to some patients, and in one I gave ten doses at weekly intervals.

This method of treatment cannot, and does not, attempt to replace operation. It is important that the growth should be removed as widely as possible, and the injections then given in the hope that they will attack any small foci which may have started in the internal organs.

The method may be used with advantage, and the results are best seen, in inoperable cases. There is every hope that, though a cure may not be brought about, the rapidity of the growth may be lessened, and at the same time it gives the patient the feeling that something is being attempted. Too many cases are brought which are past all hopes of being benefited in the smallest degree. In early cases, where operations and other procedures, such as radium and x rays, are used, the results can hardly be attributed to one agent or to one procedure, and therefore definite scientific data are very difficult to obtain.

It is too early, of course, to attempt to publish results obtained from the injection of lead, but there is no doubt that lead colloids give satisfactory results sufficiently frequently to justify hope that the growth may be retarded or may even disappear. At the same time, the limitations of this form of treatment must be realized. It is a most unsuitable form of treatment to give when the walls of a hollow viscus have been extensively invaded by the growth, because destruction of the growth means destruction of the wall of the viscus, and rapid death must follow. In certain cases, as in oesophageal strictures where a gastrostomy has been performed for cicatricial contraction of the oesophagus, this contraction has been greatly increased and the growth of a tumour brought to a standstill, so that the word "cure" may almost be used, but cure will not mean the restoration of the natural passages.

In passing, I might say that in one of my oesophageal cases the large, hard mass of secondary glands in the neck disappeared. A second case was lost through destruction of the growth. Two large secondary masses of breast carcinoma, which had recurred on the chest wall, completely broke down during the course of injections; unfortunately, one of the masses had penetrated the chest wall, and the breaking down set up septic pneumonia in the lung to which it was adherent, and the patient died. In yet another case of breast carcinoma, where the breast had been removed and a course of treatment given, internal secondary growths broke down, and the patient died through haemorrhage, because one of the growths had invaded the wall of the splenic artery. It may some day be possible to obviate these accidents.

Growths of the solid variety or in the solid viscera, or in situations which are not vital, may be dealt with fearlessly. Patients suffering from kidney disease with albumin in the urine, or showing the extremes of anaemia, are hardly subjects for such treatment.

In conclusion, I have to thank Mr. Patterson for kindly letting me make use of his preparation in the above cases. I gladly accede to his wish that I should state the harmlessness and absence of reaction of the preparation. I have used material from one single batch for more than a year, which proves that the preparation may be considered perfectly stable.

[1] The commercial manufacture of the preparation has been undertaken, under the personal supervision of Mr. Patterson, by the British Drug Houses, Ltd., Graham Street, London, N.1.

THE COMPARATIVE VALUE OF THE "AMMONIA COEFFICIENT" AND THE RATIO BETWEEN FREE AND AMMONIA-COMBINED ACID IN URINE.

BY

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THE object of this communication is to consider the comparative value of two quantities which are used in the examination of urine, both of which give a valuable indication of physiological activities. The comparison was instituted with a view to determining which of these two values has the better practical diagnostic possibilities. Both quantities are ratios, and the mechanism involved in the case of one of these was outlined by us at the provincial meeting of the Children's Section of the Royal Society of Medicine held in Bristol in June, 1923,[1] and dealt with more fully subsequently.[2]

The first of these ratios is obtained by titrating 25 c.cm. of urine with decinormal sodium hydroxide solution, using as indicator phenolphthalein; this gives the free acid value; then to the same solution neutral formaldehyde solution is added (Folin's method), when a further titration with alkali gives the ammonia-combined acid, or ammonia.

The ratio, which we will designate R_A, is obtained by dividing the second titration by the first, and represents the ratio of ammonia to free acid present in the urine. The second ratio involves the same titrations, but in addition the nitrogen is determined by the usual hypobromite method; a ratio is obtained by comparing the nitrogen existing as ammonia with the total nitrogen from the hypobromite determination. This ratio we will call R_U. The two ratios are therefore:

$$R_A = \frac{\text{Ammonia}}{\text{Acid.}}$$

$$R_U = \frac{\text{Nitrogen as ammonia}}{\text{Total nitrogen (hypobromite).}}$$

As a practical point it will be seen that R_U requires a third determination which is by no means as accurate or simple as the ordinary titrations needed for R_A. (R_U closely corresponds with what is generally termed the "ammonia coefficient.")

The employment of ratios is of considerable importance, since the wide variations in concentrations of urine would stultify results considered singly because the quantity of

urine secreted over some period must be measured; by employing ratios valuable indications are given from examination of a single sample, especially if the specimen is selected by the method we have indicated.[2]

Considerable variation in concentration of urine may even affect these ratios, and for this reason results obtained from very dilute urines are not considered. This variation is a matter with which we hope to deal in a further communication.

The question might very reasonably be asked, Are these ratios merely empirical, or is there any physiological reason for their use? That is to say, have they a theoretical as well as a practical basis? For R_A there is such a basis of theory, as it indicates the effort that is being made to maintain the constant reaction of the blood, giving information of value in assessing its state and more particularly the amount of buffer salts present. The ammonia secreted may be compensatory, or in certain cases may arise from incomplete metabolism; with its source we are not immediately concerned.

With the ratio R_U there appears to be no blood mechanism which relates ammonia to urea; the urea in blood may normally vary within wide limits, and R_U may or may not be a purely fortuitous ratio depending upon the source of the excess of ammonia. The value of the ratio may really be in the numerator which happens arithmetically to be little disturbed by usual variations in the denominator.

It is interesting to note that Palmer and Henderson make use of an inverted form of R_A, but attach no special significance to it, though they find it a convenience in their pathological studies.[3]

Opinions differ as to the normal value for R_U; Wells[4] gives the proportion of nitrogen in urine in the form of ammonia as from 2 to 5 per cent., which in diabetic acidosis may rise to 10 to 25 per cent. Todd[5] states that normally about thirty times more nitrogen is excreted as urea than ammonia, and when the ratio of urea to the ammonia nitrogen is as 10 to 1 or more, we are justified in saying that acidosis is present, but figures between 10 to 1 and 20 to 1 point to defect of the liver. Burgess[6] gives an average value in a series of normal children of 7.04. The figures we have obtained are more in agreement with those of Burgess. There would seem to be something unsatisfactory when a ratio which is given normally in the neighbourhood of 4 (Wells and Todd) has to increase to as much as 10 before it has indicative value.

The normal value of R_A ranges up to 1.5; a value exceeding this for an early morning specimen, having a first or acid titration greater than 5 c.cm., indicates some derangement. This is in agreement with the values given by Palmer and Henderson,[3] where the quantities are comparable.

To summarize briefly: Of the two ratios R_A is more accurately and readily determined, and it is definitely connected with a well established mechanism. R_U, including as it does the same numerator as R_A, must in a measure give similar indications, but is affected by a denominator which does not appear to have any definite connexion with the numerator such as is found in R_A.

Experimental.

Some fifty samples of early morning urine, presumably normal, gave the following values:

	Average.	Minimum.	Maximum.
R_A	1.02	0.6	1.5
R_U	6.6	3.4	9.0

so that in normal urines the two ratios run along fairly parallel lines. More interesting are the results of a similar comparison in cases not normal.

Case 1.—A case of cyclic vomiting in a little girl which we were fortunately able to observe also during normal health.

In normal health:

R_A ...	1.08	1.0	1.05	1.50	1.07	1.23	1.13	0.87	1.11
R_U ...	8.2	7.1	7.8	6.1	5.9	6.7	6.6	6.5	6.8

During attack and recovery:

R_A ...	4.47	4.09	1.56	0.84	1.35	1.34
R_U ...	8.9	10.4	8.0	6.4	8.7	9·3

It will be seen that whereas R_A indicates clearly a considerable derangement, R_U gives no very definite information.

Case 2.—A case of simple acetonuric vomiting. We were able to observe this patient also during normal health.

In normal health:

R_A ...	1.23	0·87	1·01	1.22	1.20	0.96
R_U ...	7.3	6.7	7.0	4.9	3.8	7.3

During attack and recovery:

R_A ...	2.10	1.75	1.88	2.0	1.21	1.40
R_U ...	9.9	9.8	4.6	5.9	7.6	8.1

Case 3.—A case similar to 2; the ratios were recorded during attack and recovery:

R_A ...	2.49	4.25	2.57	1.55
R_U ...	10.7	11.3	5.35	5.35

Case 4.—This was a case of diabetes, the patient being an adult male.

R_A ...	2.07	1.82	2.60	3.60
R_U ...	14.8	5.9	15.4	13.0

Here the ratio R_A is uniformly consistent with a marked derangement of function, but R_U fails to indicate this in one case.

Case 5.—A case of catarrhal jaundice in small girl.

R_A ...	2.13	3.36	3.25
R_U ...	15.2	17.3	14.6

Case 6.—A case of catarrhal jaundice in a girl aged 10 years.

R_A ...	1.62	2.0	2.0
R_U ...	4.4	7.1	7.5

A few cases in health and when unwell where a series of specimens of urine were not available:

	Ill.	Well.	Ill.	Well.	Ill.
R_A ...	3.54	1.29	2.22	1.36	3.62
R_U ...	14.5	6.6	8.2	4.7	15.8

It will be seen from these tables that on some occasions both ratios give similar indications, but in certain instances when R_U fails to denote any derangement R_A shows distinct abnormality—that is, R_A appears to give more generally reliable information than does R_U. As the value of these ratios is affected by taking alkalis or acids, the above results were drawn from cases where the administration of drugs containing these substances was not immediately essential in the treatment.

There still remains a considerable volume of work to be carried out upon this and similar ratios, and it would seem highly probable that by careful comparison of values obtained from various ratios it might be possible, not only to discover a derangement in physiological mechanism, but also in a measure to locate it, and we are carrying out a further investigation on the subject.

Conclusion.

Two ratios have been compared, and of the two the first—namely, the ratio of ammonia to acid present in a specimen of urine—seems to give generally better information, and has the advantage of being much more readily and quickly determined.

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THE PERINEAL AND PELVIC FLOOR MUSCLES IN THE SECOND STAGE OF LABOUR.

BY

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THE care or management of the perineum consists in the use of means for the prevention and limitation of perineal rupture in labour. It applies to the later period of the second stage, the period of perineal distension. The teaching, express and implied, that during the pains of this period the perineal muscles are in a state of contraction seems opposed to some obvious phenomena of labour. This prompted a reference to a number of books on midwifery in order to discover if the teaching were common, and in hopes of learning the evidence on which it is based.

Sixteen textbooks and manuals of midwifery, published from 1899 to 1923, were consulted. Twelve do not mention

the matter, four do. In two of the four the same author is concerned. The terms used are such as these:

> Between the pains the pelvic floor is relaxed, not rigidly contracted; try to deliver between pains, the perineal muscles being then relaxed instead of tightly contracted; spasmodic rigidity of the muscles of the pelvic floor obstructs delivery; during a pain there is contraction of muscles of the pelvic floor and outlet; this makes the perineum more rigid and therefore more liable to tear.

All this may be summarized to mean that whilst the perineum is becoming more and more stretched (that is, during the pains) its muscles and those of the pelvic floor are in a state of spasmodic, tight, or rigid contraction, and that this obstructs delivery and favours laceration. This seems to signify that the mechanism of a physiological function normally so acts as to obstruct its completion and favour its injurious accomplishment—a view hard to accept without very satisfying evidence in its favour.

A little consideration of the conditions of the second stage compared with the effects of contraction of perineal and pelvic floor muscles will serve to indicate the difficulty of accepting this teaching. The coccygei and levatores ani in contracting flex the coccyx forwards and upwards upon the sacrum and raise the ano-coccygeal raphe; during the pains the advancing head forces the coccyx downwards and backwards in extension upon the sacrum and depresses the ano-coccygeal area. The pubo-coccygeal fibres of the levatores ani in contraction oppose bilateral distension of the anal canal; during the pains the advancing head spreads the anal canal bilaterally and forces the adjacent edges of the levatores ani far apart. The sphincter ani in contraction closes the anus; it is precisely during pains that the anus is stretched more and more widely open. The compressor vaginae in contraction constricts the vaginal orifice; this orifice is stretched more and more widely open by the head advancing during the pains.

Thus it appears that during the pains of the perineal "management" stage the muscles of the pelvic floor and perineum are stretched, as indeed are all the perineal tissues. They are not contracted, and therefore it is not true that their contraction opposes delivery and favours laceration. Considering the condition of the perineum during a pain just before delivery—bulging, stretched in all directions, tense as a drumhead—one wonders what is the evidence and how precisely it was obtained for the teaching in question. But on these points the books are silent.

A CASE OF HYDATID PNEUMOTHORAX.

BY

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THE rupture of a hydatid cyst of the lung into the pleural cavity is a rare cause of spontaneous pneumothorax, and it is therefore considered that the case detailed below is worthy of record.

This condition was first described by Fouquier in 1828, two years after the death of Laennec. He states that at the autopsy on a case of spontaneous pneumothorax "the right chest was half filled with a yellow turbid fluid in which floated a sac the size of a large nut, rather soft, of milk-white colour, and semi-translucent, which one could not fail to recognize as a ruptured hydatid cyst." In 1925 Professor F. Dévé of Rouen[1] collected thirty-one authentic cases. Since then one other case has been reported by Bacaloglu and Tanasesco.[2] The condition occurs most frequently in young adults, and in males twice as often as in females. The rupture is usually precipitated by a sudden effort.

The perforation in the pleura is commonly situated on the inferior lobe of the lung and more often on the right side than the left, thus differing in this latter respect from pneumothorax secondary to tuberculous disease. It may be round or linear, admitting the tip of the finger or measuring several centimetres in length. The perforation leads into a cavity in the lung which is not usually larger than an orange. The cyst itself is commonly found free in the pleural cavity and in most cases is ruptured, but in the case described by Mercier in 1838 it was intact and filled with a clear yellow fluid. It is sometimes accompanied by daughter cysts, and, rarely, there is a secondary growth of echinococcus on the pleura, caused by the dissemination of parasites at the moment of rupture of a fertile cyst.

By studying sections of the lung of a rabbit in which the condition had been artificially produced Dévé came to the following conclusions as to the course of events which take place. There is not a sudden rupture of the cyst into a bronchus, but a gradual invasion of the bronchus by the cyst wall, followed by necrosis of the wall of the bronchus at one point. A pneumocyst is thus produced. The necrotic plug acts as a valve, the tension in the cyst rises and its wall becomes stretched. Owing to the fact that the part of the cyst wall which is adjacent to the pleura lacks support and that its blood supply is diminished, a slight increase of intrabronchial pressure is sufficient to cause it to rupture.

The hydropneumothorax thus produced may remain sterile for several months. Sooner or later, however, the entrance of organisms from the bronchus, combined with the irritation produced by the presence of the hydatid fluid and the cyst wall in the pleural cavity, leads to suppuration and the formation of a pyopneumothorax.

Case Report.

J. P., a groom, aged 36, had been in South Africa in 1913, and had served in France during the late war. He stated that he had always been fond of dogs and that he kept one in the house. He had suffered from cough since being gassed. There had been no haemoptysis or loss of weight.

On December 17th, 1926, at 10.30 a.m., his cough became much worse, and during the next hour and a half he expectorated about two pints of frothy sputum. He felt better during the afternoon, but at 5 p.m., while walking upstairs, he developed rapidly increasing dyspnoea and severe pain all over the chest, not localized to either side. That evening his temperature rose to 102°. On the following day Dr. MacCormack of Steeple Claydon found signs of pneumothorax on the left side. The temperature remained high until December 21st, and then began to settle down. On December 23rd the sputum was purulent. It was examined, and no tubercle bacilli were found. There was never any haemoptysis. On December 28th and January 2nd air was aspirated from the left pleural cavity, giving relief to the dyspnoea. There was no urticaria. There was no family history of tuberculosis.

He was admitted to the Radcliffe Infirmary on January 16th. He was a thin man with flushed face, orthopnoeic, and obviously ill; temperature 100°, pulse 100, respirations 28. The tongue was dry and furred. Cardiac pulsation was visible below the right nipple in the fifth intercostal space. The area of cardiac dullness was entirely to the right of the sternum. The heart sounds were normal. The left side of the chest was larger than the right; movement of the chest was impaired and vocal fremitus absent on the left side. The percussion note was hyper-resonant on the left side down to the seventh rib, and dull below this level. Weak vesicular breathing was present above the seventh rib and absent air entry below. The bell sound was clearly audible on the left side between the fourth and seventh ribs. The liver and spleen were not palpable. The sputum contained pneumococci.

On January 18th the left pleural cavity was aspirated in the ninth intercostal space. About two pints of creamy pus with air were removed. At operation, the same evening, under gas, oxygen, and ether anaesthesia, one inch of the ninth rib in the left scapular line was resected. When the pleural cavity was opened air at first bubbled out, and was followed by about two pints of pus. There was a large cavity the walls of which could not be reached with the finger. No adhesions were felt. A few flakes of fibrin were removed and a tube was inserted.

The pus was found to contain pneumococci, but was sterile. The temperature continued to swing, rising to 100° every evening until January 24th, when a ruptured cyst was discharged through the wound. The temperature immediately fell and remained normal.

The pathological report on the cyst was to the effect that it measured in its collapsed state four inches in diameter, and consisted of a yellowish substance. On the inner aspect were a few small excrescences, but neither in these nor in the scrapings from other parts were any hooklets found. Microscopically the cyst consisted of a laminated, translucent, non-cellular structure. It was undoubtedly a hydatid cyst.

The chest was *x*-rayed on February 9th, and no evidence of other cysts in the lungs was found. There was no eosinophilia. The patient made an uninterrupted recovery.

According to Dévé the initial cough in these cases is usually dry. The large quantity of sputum expectorated by the patient in the above case might be due to pulmonary oedema caused by hydatid fluid leaking out when the cyst opened into the bronchus.

The noteworthy points in this case are (1) the opening of the cyst into a bronchus, (2) the production of a pneumothorax six and a half hours later, (3) the valvular nature

of the opening in the pleura which led to an excess of air under pressure in the pleural cavity, and which necessitated special relief on two occasions before admission to hospital.

I am indebted to Dr. A. G. Gibson for assistance and permission to publish this case.

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Memoranda:
MEDICAL, SURGICAL, OBSTETRICAL.

TWO CASES OF COINS IN THE OESOPHAGUS.

THESE cases, which occurred within three weeks of each other, are published in order to show the size of coin that is likely to become impacted in the oesophagus at different ages. Incidentally they also illustrate the fact that a coin which can pass through the upper end of the oesophagus can pass unaided through the rest of the alimentary tract. In both cases the misfortune was caused through the impish mischief of young children, so that a word of caution may be uttered against giving coins to children as playthings.

CASE I.

T. C., a labourer aged 35, while having a meal at mid-day on September 16th, drank a cup of tea rather hurriedly and then felt something in his throat. It was ascertained that his baby had dropped into the cup a penny it had been given to play with; the father tried to vomit, but did not succeed.

On arrival at the hospital *x*-ray examination showed a coin impacted at the level of the sterno-clavicular joint. On endoscopic examination the penny was seen, but the area being somewhat fouled with blood from loss of a tooth in a mouth with marked pyorrhoea, it could not be gripped with the forceps, and disappeared. On a second *x*-ray examination it was seen to move freely with respiration at the level of the cardiac orifice of the stomach.

The patient was again *x*-rayed on the following afternoon, and the penny was seen to be in the stomach near the pylorus. He was allowed to go home and told to come up in thirty-six hours. This he did, bringing the penny in his hand, and reported that it had been passed in his motions (thirty hours after it had been seen to be lying in the stomach) without any difficulty or any haemorrhage in the stools.

CASE II.

P. K., aged 6½ months, on October 7th, about 5 p.m., swallowed a farthing given to her by her little brother. She went red in the face and nearly choked. She was taken to her doctor, who sent her to the hospital. At 11 p.m. *x*-ray examination showed the farthing impacted in the oesophagus at the level of the sterno-clavicular joint. On oesophagoscopy the coin was seen and removed with forceps. The child left the hospital three days later in perfect health and with no complications.

I am indebted to my clinical assistant, Mr. Lindenbaum, for his notes on these two cases.

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HAEMATURIA TREATED BY INJECTION OF SERUM.

THE following case is of some practical, apart from a possible theoretical, interest.

A boy, aged 3½, had an attack of haematuria after tonsillotomy about a year ago. I am informed that, apart from one or two intervals of a few days, during which the urine appeared to be free from blood, it had persisted in varying degree ever since. The greater part of the year was spent in hospital, where the urinary tract was carefully investigated and an exploratory nephrotomy performed on the left side. Apart from an impression gained that the left kidney was somewhat large, the result of the operation was negative, and the child was discharged from hospital uncured. When I first saw him, in December, 1926, he was still passing bloody urine, was markedly anaemic, and his general condition was very miserable. On examination no abnormality of the kidneys could be detected, and I made the diagnosis of essential haematuria precipitated by septic absorption following tonsillotomy.

I decided to treat the child by injection of horse serum. The first dose of 10 c.cm. was followed by acute urticaria. As the degree of haematuria seemed to have decreased I gave a second injection of 20 c.cm. one week later, both injections being given intramuscularly into the buttocks. After the second injection the haematuria disappeared, and has not since returned. It is, of course, too early to speak of a permanent cure, but as the child had previously been free from haematuria for a few days at a time only, the outlook seems hopeful. The improvement in the general health has been very noticeable, the whining child being now normally vigorous and lively.

Apparently the haematuria was due to absorption of toxins from the cut surfaces of the tonsils. Why these toxins should have attacked the endothelium of the renal vessels is an interesting question. The necessary antitoxins seem to have been produced in the child's body by the injection of the proteins contained in the horse serum. The injection of these proteins produced an attack of urticaria, as is known sometimes to happen, and apparently a by-product of the reaction was the required antitoxin. The sequence of events in this case supports the view that a bodily reaction is necessary for the production of antibodies. On the other hand, the occurrence of haematuria after the operation of tonsillotomy may have been quite fortuitous and in no way due to sepsis, and the cessation of the haematuria may be attributable to coagulants contained in the horse serum. Were it practicable, a bacteriological examination of the remains of the tonsils would be of interest.

London, N.15. L. J. GREEN, M.R.C.S., L.R.C.P.

DEATH FROM HAEMORRHAGE FROM THE AORTA INTO A BRONCHUS.

THE following case is an instance of what must be an unusual cause of death.

An old woman, aged 81, died at the Tooting Bec Mental Hospital on December 20th, 1926; she was admitted on January 27th, 1922. She suffered from senile dementia with marked loss of memory for all recent events, but a remarkable recollection of the past. She could repeat pages of Shakespeare's plays.

She had arterial degeneration to a moderate degree, and experienced several cerebral attacks with transient paralysis. After one of these attacks she lost voluntary control of the right arm, which used to execute all sorts of movements of its own accord, much to the annoyance of the patient, who would lay hold of it with the left hand to keep it in order. These movements ceased when the patient was asleep.

At the time of her death she was seen by a medical officer, who reported that arterial blood had gushed out of her mouth for about ten minutes before she died. At the *post-mortem* examination it was found that a patch of adherent pleura had attached itself to a hard plaque on the aorta. A communication had formed between the aorta and a rather large bronchus, and after filling up the lung the blood had poured out of the mouth till the patient was dead.

London, S.W. THOMAS LINDSAY, M.D., F.R.C.S.Ed.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

GLOUCESTERSHIRE BRANCH.

The Blood Picture in Various Diseases.

A MEETING of the Gloucestershire Branch was held at the General Hospital, Cheltenham, on March 10th; Dr. J. RUPERT COLLINS presided, and Dr. J. B. DAVEY read a paper entitled "Some interesting blood pictures."

Dr. Davey described the source and antecedents of the cells of the blood. In spite of the multitude of names used by various workers for the same cells, a common ancestor for all the various blood cells was now accepted by the majority. This cell, found both in marrow and in lymphatic tissue, somewhat resembled the large lymphocyte and was named the haemocytoblast. From this cell were formed in the marrow the erythrocytes by loss of nucleus and elaboration of haemoglobins; the myelocytes by development of granules; the large lymphocytes and thence the small lymphocytes, and the megacaryocytes. In lymphatic tissues it formed the large and small lymphocytes. As regards pathological conditions, the most familiar was probably the rapid increase of polymorphonuclears in the circulating blood in septic processes. Many of these cells were of immature type. The marrow was very susceptible to toxic influences, and it was not difficult to conceive that some toxic process was at work in myelocytic leukaemia, where very primitive forms, the myelocytes, were poured into the circulation, their conversion into polymorphonuclears being largely inhibited. In such cases the marrow, at the necropsy, showed clear evidence of great myelocytic activity. In lymphatic leukaemia the process was not so

clear, since although as a rule the lymphatic glands were enlarged this was not invariably the case. Presumably in these cases the haemocytoblasts in the bone marrow were producing the lymphocytes. But it should be noted that some cases of so-called lymphatic leukaemia were not so at all: they were really leukaemias of that very primitive cell, the myeloblast. This cell was strikingly like the lymphocyte, but contained the oxidase granules. In pernicious anaemia there might be some myelocytes, and in an acute leukaemia megaloblasts; it might transpire that these two diseases were not only closely related but were even varieties of one disease. A case of chronic myelocytic leukaemia was quoted in which ragged ulcerated masses somewhat resembling growths were found in the ascending colon. These were masses of myelocytes. Such a picture lent some support to Gulland's theory that leukaemia was a sarcoma of the blood cells. Dr. Davey showed slides under the microscope illustrating the various kinds of cells, and also a case of lymphatic leukaemia in which the clinical course did not extend over more than three months. In another case the illness lasted only fourteen days, and though the cells resembled lymphocytes it was shown that 83 per cent. were oxidase-containing cells, and were therefore myeloblasts. This case illustrated Goodall's contention that the really acute so-called lymphatic leukaemias were myeloblastic. In a third case the illness began with a lump in the neck, and death followed in eight weeks; the case was one of lymphatic leukaemia. Under one of the microscopes was shown a nucleated red cell undergoing mitotic division, taken from the circulating blood of this patient. In these three fatal cases the white cell count was but moderately raised above normal. Dr. Davey next described the case of a woman, aged 26, with symptoms resembling those of acute leukaemia; the blood picture did not exclude that diagnosis. The case turned out to be one of glandular fever, with a very different prognosis. Dr. Davey described in conclusion two cases of anaemia occurring in pregnancy, each of which had colour indices above one, and megaloblasts were present in the circulating blood. This was regarded as a rare form of anaemia. Transfusion in one case led to a most striking improvement, which was maintained by the administration of arsenic.

The Significance of Optic Neuritis.

Mr. N. H. PIKE discussed the various conditions which are included in the term "optic neuritis," including retrobulbar neuritis, papillitis, papilloedema or choked disc, neuro-retinitis, and optic pseudo-neuritis. He said that the term "retrobulbar neuritis" was applied to inflammation of the optic nerve behind the eyeball, and that the characteristics of this condition were rapid loss of central vision, some pain on pressing on the globe, a pupil which contracted to light, though the contraction was not maintained, and a marked tendency to recovery. One of the commonest causes was disseminated sclerosis. The accessory nasal sinuses had been blamed for infecting the optic nerve, but Mr. Pike, who had the advantage of being also a rhinologist, had only seen one case in his own experience in which he could trace a causal relation. That case was exceptional in being, not a true retrobulbar neuritis, but a monocular optic neuritis. All the other terms which he had mentioned had in common the fact that they referred to the appearance of the optic disc as seen with the ophthalmoscope. They could be divided into two classes: those due to intra-ocular causes, and those due to intracranial but extra-ocular causes. To the first class belonged the large group of cases of neuro-retinitis, which had as a common factor, speaking broadly, a high blood pressure in the larger arteries. The changes in these cases were oedema, exudate, and haemorrhage; there was no high pressure in the retinal artery. Mr. Pike had demonstrated that in a woman with a brachial systolic pressure of 270 mm. the retinal pressure was actually lower than normal, and so, as an ophthalmologist, he would condemn drastic attempts to bring down the blood pressure. The other class of case—papilloedema or choked disc due to intracranial causes—was in many ways the most interesting. Its development was often described under five stages, but it was a gradual process from start to finish. The amount of swelling of the disc could be measured, and a useful division was to limit the term "choked disc" to a swelling over 2 D. Occasionally a typical choked disc was found as a manifestation of renal disease. Whatever the root cause might be, it had been shown by Horsley to be a direct expression of the mechanical agency of increased intracranial pressure. Intracranial and intra-ocular pressures had been shown to be identical in the normal state. Mr. Pike briefly indicated the extreme complexity of the factors associated with rise in pressure, and pointed out that there was more to be taken into account than the ordinary laws of physics. In Mr. Pike's experience very little reliance could be placed on difference between the discs as a localizing sign. The ipsolaterality of choked disc, on which Sir Victor Horsley laid stress, was not now accepted as of importance. Mr. Pike gave the histories of several cases to emphasize the necessity of decompression for the relief of papilloedema and other pressure signs, and showed numerous lantern slides which illustrated the various physiological and pathological points. In conclusion, while he made a plea for decompression, he drew a sharp distinction between that operation and one designed for the removal of a tumour, which, in his view, was not as a rule successful in a general hospital.

Reports of Societies.

PATH OF INFECTION IN TUBERCULOSIS.

AT a meeting of the North-Western Tuberculosis Society in Manchester on March 31st, Dr. ADAMS, the president, in the chair, Professor S. LYLE CUMMINS read a paper entitled "The bearing of recent laboratory research on clinical conceptions in tuberculosis."

Professor Lyle Cummins said that his experience in the *post-mortem* room had impressed upon him the pleomorphism of tuberculosis in human beings as compared with the uniformity observed in animals. In the laboratory animal there existed what might be called "natural" tuberculosis, the same characteristics being found also in infants and primitive races—namely, generalization of the disease with rapid termination. He contrasted this with the tuberculosis usually seen in human beings—namely, pulmonary disease. Some modifying factor appeared to have been at work, and "modified" tuberculosis tended to be localized in the lungs; intermediately was the large section of surgical tuberculosis which was the aftermath of an unrecognized general tuberculosis, causing metastatic deposits through the blood stream. A later stage was localized disease in the lungs. In "natural" tuberculosis the tuberculin test produced negative or slight reaction; in "modified" tuberculosis there was a marked reaction. "Natural" tuberculosis was characteristic of non-allergic age groups and races; "modified" tuberculosis was characteristic of allergic age groups and races, the modifying factor being the production of allergy. Three questions as regards pulmonary tuberculosis were still unsolved: (1) Was the disease caused by the reawakening of an infection in childhood, or due to the reinfection of an allergic lung? (2) Did the bacilli enter through the alimentary tract or in the inspired air? (3) Why was the disease more commonly apical than otherwise? In regard to (1) much experimental work had been done. Baldwin obtained infected guinea-pigs and tried to reinfect them; he found them very resistant to reinfection, but did succeed with large doses. Krause and Willis introduced an emulsion of bacilli into the skin of guinea-pigs, and found that even one hour after inoculation the cutting out of the piece of skin infected was too late to prevent infection of the animal; if the animal had been previously infected five days was not too late; thus there was great retardation in infected animals. Similarly, they found that in previously uninfected animals the neighbouring glands were reached within twenty-four hours, but in animals previously infected not in twenty-one days. Thus a previous

infection produced retardation and modification of disease. The presence of scars in the lungs of adults was evidence that much early tuberculosis in children did heal. There was a correlation between such physiological influences as childbirth, lactation, strain, and infection pointing to the awakening of an old infection; on the other hand, no infection came from healed scars. There was difficulty in establishing definite sources of infection, but these certainly did occur. Mullins's experiments on rabbits consisted in injecting emulsions of bacilli into the posterior nares of rabbits under an anaesthetic, and he found that either lung could be infected. Soper repeated these experiments with *x*-ray control. The results showed definite parenchymatous lesions in the lung of allergic rabbits long before rabbits previously uninfected developed lesions; in the latter, the reaction, though delayed, was more serious. Calmette held such experiments to be unnatural. To sum up, the evidence was inconclusive, but there were two certainties—namely, that pulmonary tuberculosis was due to a reawakening of previous infection and that strong evidence existed in favour of reinfection. In regard to the second question, Calmette believed in the alimentary route of entry. Guinea-pigs fed on fatty broth containing bacilli showed bacilli in the lacteals in three hours. In early life the mucous membrane was more easily permeable; on the other hand, it was to be noted that in later life most bacilli in the lungs were of human type, whereas swallowed bacilli were usually bovine. Also, in spite of much swallowed sputum, intestinal ulceration was comparatively rare. Calmette, however, maintained that in animals inoculated in the laboratory the lungs were always infected. Professor Cummins believed that both types of infection occurred. With reference to the third question, Professor Cummins quoted Bacmeister's experiments, in which the apices of rabbits' lungs were constricted by rings. When bacilli were injected intravenously there was a concentration of bacilli under the rings, but when bacilli were introduced into the respiratory passage no such concentration occurred, the lesions being general in the lungs. These experiments could not really be regarded as satisfactory owing to the stagnation of the circulation caused by the rings. He had himself observed groups of coal miners, some of whom had worked among silica, and found that in these latter men the lymphatic blockage was more effective at the apices than elsewhere, whereas normally coal dust was readily ingested by phagocytes.

THE ACTIVE PRINCIPLES OF ERGOT PREPARATIONS.

A MEETING of the Edinburgh Obstetrical Society was held on March 9th, with the President, Professor R. W. JOHNSTONE, in the chair. Professor A. J. CLARK raised the question "Do the pharmacopoeial preparations of ergot contain any active principles?"

Professor Clark said that he had no new discoveries to bring forward, but he wished to draw attention to certain well established facts. The history of ergot epidemics showed that ergot taken by the mouth produced toxic effects. The frequency of abortion during epidemics of ergotism probably led to the use of ergot in therapeutics. The outstanding therapeutic action of ergot was as follows. The drug when given by the mouth during labour caused increased force and frequency of pains within twenty minutes, and the intensified action was so powerful as to be dangerous if there was any mechanical obstruction. This was an unusually straightforward and easily recognizable therapeutic action. The active principles of ergot were unstable; indeed, the difficulty of obtaining reliable preparations of ergot was well known to Buchheim in 1859. It was, however, remarkable that there should be any doubt whether any given ergot preparation was active or inactive. The chemistry of ergot was for long a puzzle. In 1874 Tanret discovered the crystalline alkaloid ergotinine, which proved to be inert, but in 1906 Barger and Carr isolated the alkaloid ergotoxine which produced all the typical pharmacological actions of ergot and proved to be the hydrate of ergotinine. In 1922 Stoll isolated another specific alkaloid, ergotamine. The pharmacological actions of ergotoxine and ergotamine appeared to be identical. In addition to the specific alkaloids, ergot contained a remarkable medley of decomposition products of proteins. Tyramine and histamine, the amines derived respectively from the amino-acids tyrosine and histidine, had received most attention. These drugs produced remarkable and interesting pharmacological actions when given hypodermically, but had very little action when administered by mouth. The quantities of these amines in ergot were too small for them to be of any importance when ergot was given by mouth. The therapeutic action of ergot therefore depended entirely on the specific alkaloids, of which it contained 0.1 to 0.2 per cent. In 1907 Barger and Dale pointed out that since ergotoxine was insoluble in water the liquid extract of ergot could contain little or none of this active principle. In 1913 Carr and Dale criticized the pharmacopoeial preparations in detail and showed that they were all concocted in such a way as to lose nearly all the active principles. These criticisms were not affected by the discovery of the new alkaloid ergotamine, for this had similar solubilities to ergotoxine. In 1923 Professor Clark had performed a series of tests on the pharmacopoeial preparations of ergot made from ergot of known activity, and found that the processes of preparation involved the loss of 97 per cent. of the active principle in all cases except that of the ammoniated tincture, in which one-quarter of the active principle was retained. The properties of the ergot alkaloids had been recognized in other countries, and most of the foreign pharmacopoeias contained rational methods for making ergot preparations. Curiously enough, each revision of the *British Pharmacopoeia* since 1885 had made the ergot preparations as a whole worse than they were previously; since a new pharmacopoeia was likely to be prepared soon, the question was one of obvious practical importance. Why was it that obstetricians had accepted and apparently had used without much complaint for thirty years preparations of ergot which were found to be inert, when judged by chemical and pharmacological tests?

The Human Sex Ratio.

Dr. F. A. E. CREW then read a paper on the human sex ratio, in which he stated that the secondary sex ratio was nearly equality and seemed to constitute one of the many disharmonies which characterized the human species. One male was, in the matter of gamete formation, the equivalent of many females, and if the propagation of the race was the chief function of the species, then it would be better for the secondary sex ratio to be low unless polygyny was customary. It would seem that the habit of producing offspring had no relation to the present social needs of mankind, and that it was a phylogenetic legacy, being the expression of a mechanism which served well enough when the female elaborated as many ova as the male did sperms, but which had not been modified to fulfil the reproductive requirements of the present day. It had been established that the male in the human species was digametic, elaborating two kinds of sperm: one fertilizing an egg gave rise to a male, the other to a female. The female elaborated in respect of the elements of the sex-determining mechanism only one kind of egg. It could be shown that post-natally there was a significant sexually selective mortality, the sex ratio at birth of 104 males : 100 females being reduced through this selective elimination of the male to one of 55 : 100 in the 85-age group. It could also be shown that the sex ratio of stillbirth was higher than that which obtained among living offspring, and, further, that pre-natally this sexually selective mortality still operated, as was seen when the sex ratio of abortions was examined. Among the earlier abortions there were far more males, and the nearer to conception the higher was the sex ratio. It could be inferred, then, that the primary sex ratio, at the time of conception, was not less than 170 males : 100 females. Far more males than females were conceived, and far more perished pre-natally and natally; thus a secondary sex ratio of equality became established. It appeared that the male-determining sperms were either produced in greater numbers or else, and more probably, that they were more efficient in fertilization than were the female-determining sperms. Ante-natal care and child welfare clinics would help to save the males.

THE PROBLEM OF THE INEBRIATE.

AT a meeting of the Society for the Study of Inebriety on April 12th, Sir WILLIAM WILLCOX presiding, an address was delivered by Dr. R. B. BRANTHWAITE on the Inebriates Act, 1898.

Dr. Branthwaite said that the story of this Act, from its inception to its lapse, had much social and scientific interest; upon its administration was expended much determined effort and devotion. It involved, in relation to the class of persons for whose benefit the Act was designed, a study of the neuroses and psychoneuroses, not always in their lesser and milder forms. In the late sixties public opinion was impressed by the need for legislation for the control and treatment of inebriates. A Select Committee was appointed in 1872, but the fruit of its labours did not appear until the bill presented to Parliament in 1878, which provided for the establishment of institutions by private enterprise or philanthropic bodies for the reception of persons who voluntarily sought admission or were compulsorily committed on the petition of friends. Opinion, however, was not then ripe for compulsory powers, and in the Act which followed in 1879 these were dropped. It was the weakness of this Act that it dealt only with voluntary cases, although, no doubt, various constraints were employed, such as the threat of loss of employment or of matrimonial separation, to secure compliance. The Act, however, could not be regarded as a failure, for many persons obtained advantage by coming within its scope, and it was the knowledge of this advantage which later on encouraged the promoters of the Act of 1898. On his first contact as a young doctor with the administration of this Act, Dr. Branthwaite said he was specially instructed to regard habitual drunkenness as a disease, causing impairment of control and leading eventually to many attendant evils, such as crime and insanity. But after a few years' experience, during which he had seen a number of inebriates removed to mental hospitals, while others gave evidence of mental instability short of certifiable insanity, he revised his attitude, and thought of habitual drunkenness as a syndrome rather than as a disease. He saw it as the evidence of a fundamental neurosis or psychoneurosis. The temperance reformers of that period would not countenance such a notion, and there was a general reluctance at that time to consider the possibility of any mental or neurotic basis. After the Act of 1879 had been in force for some years, public attention was again drawn to the problem of the inebriate, and another departmental committee led to the passing of the Act of 1898, which made provision for the detention in reformatories of the worst class of inebriates. Even then there was great reluctance to accept the medical side of the question, and the majority of those who interested themselves in the management of the "reformatories" regarded those establishments as little more than substitutes for prisons in which inebriate persons could be retained for various periods and subjected to moral and religious influences. The Act authorized two classes of inebriates to be dealt with—criminal and recidivist. Some patients did benefit by the reformatory treatment, but the real cause which impeded development and ultimately led to failure was the realization that no sufficient benefit resulted to justify continuance of effort and expenditure. The Act was in operation more or less for twenty-two years; from first to last twelve reformatories were established, and 5,021 persons in all were committed for care and treatment. Everything that could be done centrally by the Home Office to bring the Act into operation was done wholeheartedly and with human sympathy. Of the cases committed to reformatories 17 per cent. proved to be definitely insane; 48 per cent. were unstable, subject to incipient insanity, mental defect, epilepsy, or various forms of neurosis or psychoneurosis; and 35 per cent. were apparently normal, or subject to so mild a degree of instability as not to justify an attempt at diagnosis. Of those in the first of these classes, some, when admitted to the reformatories, were found actually to be suffering from certifiable mental disease, while in the case of others who were in an ill-balanced excitable state on admission it gradually became evident that they could be dealt with only by certification. In the second class many of the types of mental disorder encountered differed only in degree from those seen in mental hospitals; cases of feeble-mindedness were common, and among them were many whose condition amounted to imbecility. A very large proportion of them would have come under the more modern definition of "moral imbecile"; they had a medium grade of intelligence, but were of a low moral type, not amenable, or only temporarily so, to good influences, asocial, callous in temperament, and inordinately selfish. The third group included persons approximately normal in conduct when deprived of alcohol, though many of them showed abnormal irritability, suspiciousness, shortness of temper, disregard of truth, and, most significant of all, dislike of regular work or anything savouring of monotony. It was from the persons in this third group that any good results of the reformatory system were forthcoming. The last case under the Act was committed in March, 1921, and the last certificate withdrawn shortly afterwards. This well meant effort to reform the criminal and recidivist inebriates of the lowest type had proved a failure, partly owing to difficulties beyond the control of those responsible for the administration, but mainly because the mental condition of most of the patients was such as to make reform impossible. Whether any better result would have followed the full recognition of the mental aspect of the problem and the application of the more modern methods of mental treatment it was hard to say. Many of the persons in the first and second group, and not a few in the third, were quite impervious to suggestion and incapable of self-help. With regard to the future, Dr. Branthwaite felt that the treatment of habitual drunkenness could not be distinguished from the treatment of mental defect or disorder in the most comprehensive sense of the term. This view of the subject should be fully realized by those whose duty it was to provide for children and young persons under the Mental Deficiency Act, and by all who were now advocating facilities for early mental treatment. He did not believe in the hereditary transmission of drunkenness, but only in the transmission of a predisposing constitutional peculiarity which might manifest itself in mental disorder, neurosis, epilepsy, or drunkenness. Drunkenness in successive generations was no evidence of its heredity, but only of a psychoneurotic strain.

Dr. A. E. A. CARVER said that the underlying psychoneurotic basis had been so far recognized by the Church of England Temperance Society that at the recent formal opening of its home for inebriates the invitation issued in the name of the Bishop of London spoke of a home "for the treatment of certain types of functional neurosis." Whenever an alcoholic or a drug addict was discovered and his addiction, so to say, was washed away, there remained a naked psychoneurotic.

Sir ARTHUR NEWSHOLME said that the figures given by Dr. Branthwaite were small in comparison with the population. In the years when the Inebriates Act, 1898, was being most fully administered the admissions to reformatories numbered only about 500 a year, which was 1 in 70,000 of the population, whereas the convictions for drunkenness in a year represented 1 in 400 of the population. No doubt those who were sent to institutions were of a malignant and almost incurable type, and to draw wide conclusions—as Dr. Branthwaite had not done—on a national scale from that small minority would be fallacious. The tendency of modern thought was to regard drunkenness as generally, if not always, the result of a psychoneurosis. But might not the facts be reversed in a number of cases, and habitual drunkenness, as a social phenomenon, arising from social habits, lead to the development of a psychoneurosis, instead of the psychoneurosis leading to the drunkenness?

Sir WILLIAM WILLCOX was inclined to agree with this view. A drug habit of any kind had a bad effect on the brain. One of the last pieces of work done by the late Sir Frederick Mott was to show that veronal and sulphonal and other habit-forming drugs caused actual change in the brain structure. Sir William Willcox thought that the development of a bad habit might lead to some actual brain degeneration, and thus a vicious circle was formed.

Reviews.

HOUSES AND HOMES.

ANY well disposed person desiring to acquaint himself—as every well disposed person should—with the origins, progress, and present situation of the housing question in this country will find in *The Housing of the Nation*,[1] by Dr. F. E. FREMANTLE, M.P., with a preface by Mr. NEVILLE CHAMBERLAIN, a compendious and trustworthy guide. Dr. Fremantle, as one who in several capacities has devoted close attention to housing, speaks with admitted authority. He recalls that under the Hayes-Fisher and Addison schemes the Government offered housing grants to local authorities. The Chamberlain Act of 1923 was the charter of private enterprise, giving subsidies through local authorities to private builders. By the Wheatley Act of 1924 the annual grants of the Chamberlain scheme were increased in certain cases. For Chamberlain and Wheatley houses the current standards are that the house must contain a bath in a bathroom, that the density per acre must not exceed eight houses in agricultural areas or twelve elsewhere, and that floor space must range between 620 and 950 square feet for cottages and between 550 and 880 square feet for flats or bungalows. The housing campaign throughout the country has been productive of good results, in which the public utility societies have played a creditable part.

The so-called slum areas, those aggregations of worn-out houses, which screen rather than shelter the ineffectives of the community, have hitherto been less actively dealt with. Not, indeed, that they had escaped the notice of housing reformers, but a combined attack upon them, as Dr. Fremantle explains, has so far not been possible. In slum clearance the demand of slum-dwellers to be rehoused on the site is a common difficulty. They cannot be compressed into duly spaced cottages on the cleared ground, and they think tenement blocks cheerless, while their translation *en masse* to adjoining rural land raises the question of their transport to work. The tenement block, if not too high, is of local remedies perhaps the least unsatisfactory. The ultimate solution, however, is not a local one: it lies elsewhere, in the garden city, the essence of which "is neither its gardens nor its houses, but its factories and its workshops." If the people move out the factories must follow, and vice versa.

Among other topics discussed by Dr. Fremantle are employers and housing, building societies, the Octavia Hill method, costs and rents, housing and the countryside, forms of construction, and housing in Scotland. He takes the view that with the cordial co-operation of all concerned the housing of the nation within the next ten years should be placed on a sound and durable footing. Dr. Fremantle's book is for the general reader, but his words will appeal with special force to the members of his own profession, to whom the country will look for direction in a matter so nearly related to health. But it is not a matter of health alone. It is a question of home life and all it has ever stood for, from the *domus laeta* of Lucretius, with its glad welcome, to the "happy fireside clime" of a more recent age, the like of which men still are seeking to-day as a peaceful sanctuary in which their children may grow up in innocent content. In the crowded slum there is little room for either peace or innocence. "The effect on children," as the author says, "is such as neither the State nor humanity will tolerate." He rightly makes this statement with emphasis. It is fundamental. *The Housing of the Nation* is cordially recommended.

[1] *The Housing of the Nation.* By Lieut.-Colonel F. E. Fremantle, M.P., F.R.C.P., F.R.C.S., D.P.H. With a foreword by the Right Hon. Neville Chamberlain, M.P., Minister of Health. London: P. Allan and Co., Ltd. 1927. (Post 7vo, pp. xiv + 193. 8s. 6d. net.)

DISEASES OF THE INTESTINES.

OF recent years the advances in our knowledge of gastric function and disorder have been so considerable that the distal portions of the alimentary canal, apart from colonic stasis and ulceration, have had comparatively little attention. This is particularly true with regard to the small intestine, and Dr. A. P. CAWADIAS's book *Diseases of the Intestines*,[2] though it includes diseases of the large bowel, will help to restore the balance. It is based on experience in the gastro-enterological clinic of the Hôtel-Dieu Hospital, Paris, and at Athens, where until recently he was physician to the Evangelismos Hospital. It is not on the lines of an ordinary textbook, and while giving plenty of references to the literature, and providing new information and ideas, shows evidence of independent thought. In the preface a distinction is drawn between a symptom-complex, a syndrome, and a disease: a symptom-complex is defined as a series of symptoms and signs grouped together clinically without any consideration as to their relationship to a lesion or functional disturbance of an organ—for example, pain in the right iliac fossa, which may be due to appendicitis, salpingitis, tuberculous glands, and so forth; a syndrome, on the other hand, is regarded as a group of symptoms and signs corresponding to functional disturbance or a lesion of an organ—for example, appendicitis or ulcerative colitis; whereas amoebic colitis is a disease.

In a discussion of the anatomy of the parts the proto-duodenum or suprapapillary portion is separated on developmental and physiological grounds from the remainder or metaduodenum, which, it is held, belongs to the mid-gut. The intestinal dyspepsias from imperfect digestion of proteins, starches, and fats are next dealt with, and reference is made to kytarinorrhoea, or the diarrhoea occurring in some individuals when they take green vegetables and fruit, because there is insufficient bacterial digestion of cellulose. The inflammatory syndromes are divided into the diffuse—such as acute and chronic entero-colitis, typhlo-colitis, and sigmoido-proctitis—and the localized—namely, appendicitis, sigmoido-diverticulitis, and proctitis, acute and chronic. Muco-membranous colitis is described as a combination of spasm and hypersecretion of mucus due to overstimulation of the parasympathetic. Its source may be in the colon, but more often is elsewhere. The motor syndromes include organic and functional colonic stasis, stenosis of the small intestine, intestinal obstruction, and functional or extra-enteric diarrhoea (nervous, reflex, anaphylactic, and endocrine). Haemorrhoids and intestinal arteritis, constituting the vascular syndromes, and duodenal (protoduodenal) ulcer, intestinal cancer, and the clinical syndromes produced by intestinal worms, are all described.

Much stress is throughout laid on the pathology and on etiological diagnosis, and though in some respects the presentations of the subject-matter may appear novel and therefore strange, it is undoubtedly stimulating. The book is, of course, better suited for the advanced student than for the beginner.

NOSE, THROAT AND EAR.

THERE have recently been published a number of new editions of books on diseases of the nose, throat and ear in the production of which, for one reason or another, the original author has taken no part, and amongst this number is the fifth edition of BALLENGER's *Diseases of the Nose, Throat and Ear*.[3] It is interesting to observe the varying success with which these tasks of bringing up to date the work of another have been accomplished. It may be assumed, and is indeed the fact, that in each case the editor was well acquainted with the author, and undertook the work in a spirit of sympathy and even of admiration. It is nevertheless impossible for another to tell how the opinion of an author might have been altered, how later experience might have affected his judgement, and what importance he might have attached to contemporary work and writing. It will generally be the rule, therefore, that the less the original is altered the better, and that if much change is really required it would be wiser to sit down and write a new book, though this might be fairly based on the old one. The latest edition of Ballenger's textbook, which has a well established reputation, has

[2] *Diseases of the Intestines.* By A. P. Cawadias, O.B.E., M.D.Paris, M.R.C.P.Lond. London: Baillière, Tindall and Cox. 1927. (Demy 8vo, pp. xiv + 299; 26 figures. 16s. net.)

[3] *Diseases of the Nose, Throat and Ear, Medical and Surgical.* By William Lincoln Ballenger, M.D. Revised by Howard Charles Ballenger, M.D. Fifth edition. London: H. Kimpton. 1925. (Med. 8vo, pp. ix + 1080; 551 figures, 32 plates. 42s. net.)

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The last case under the Act was committed in March, 1921, and the last certificate withdrawn shortly afterwards. This well meant effort to reform the criminal and recidivist inebriates of the lowest type had proved a failure, partly owing to difficulties beyond the control of those responsible for the administration, but mainly because the mental condition of most of the patients was such as to make reform impossible. Whether any better result would have followed the full recognition of the mental aspect of the problem and the application of the more modern methods of mental treatment it was hard to say. Many of the persons in the first and second group, and not a few in the third, were quite impervious to suggestion and incapable of self-help. With regard to the future, Dr. Branthwaite felt that the treatment of habitual drunkenness could not be distinguished from the treatment of mental defect or disorder in the most comprehensive sense of the term. 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Reviews.

HOUSES AND HOMES.

ANY well disposed person desiring to acquaint himself—as every well disposed person should—with the origins, progress, and present situation of the housing question in this country will find in *The Housing of the Nation*,[1] by Dr. F. E. FREMANTLE, M.P., with a preface by Mr. NEVILLE CHAMBERLAIN, a compendious and trustworthy guide. Dr. Fremantle, as one who in several capacities has devoted close attention to housing, speaks with admitted authority. He recalls that under the Hayes-Fisher and Addison schemes the Government offered housing grants to local authorities. The Chamberlain Act of 1923 was the charter of private enterprise, giving subsidies through local authorities to private builders. By the Wheatley Act of 1924 the annual grants of the Chamberlain scheme were increased in certain cases. For Chamberlain and Wheatley houses the current standards are that the house must contain a bath in a bathroom, that the density per acre must not exceed eight houses in agricultural areas or twelve elsewhere, and that floor space must range between 620 and 950 square feet for cottages and between 550 and 880 square feet for flats or bungalows. The housing campaign throughout the country has been productive of good results, in which the public utility societies have played a creditable part.

The so-called slum areas, those aggregations of worn-out houses, which screen rather than shelter the ineffectives of the community, have hitherto been less actively dealt with. Not, indeed, that they had escaped the notice of housing reformers, but a combined attack upon them, as Dr. Fremantle explains, has so far not been possible. In slum clearance the demand of slum-dwellers to be rehoused on the site is a common difficulty. They cannot be compressed into duly spaced cottages on the cleared ground, and they think tenement blocks cheerless, while their translation *en masse* to adjoining rural land raises the question of their transport to work. The tenement block, if not too high, is of local remedies perhaps the least unsatisfactory. The ultimate solution, however, is not a local one: it lies elsewhere, in the garden city, the essence of which "is neither its gardens nor its houses, but its factories and its workshops." If the people move out the factories must follow, and vice versa.

Among other topics discussed by Dr. Fremantle are employers and housing, building societies, the Octavia Hill method, costs and rents, housing and the countryside, forms of construction, and housing in Scotland. He takes the view that with the cordial co-operation of all concerned the housing of the nation within the next ten years should be placed on a sound and durable footing. Dr. Fremantle's book is for the general reader, but his words will appeal with special force to the members of his own profession, to whom the country will look for direction in a matter so nearly related to health. But it is not a matter of health alone. It is a question of home life and all it has ever stood for, from the *domus laeta* of Lucretius, with its glad welcome, to the "happy fireside clime" of a more recent age, the like of which men still are seeking to-day as a peaceful sanctuary in which their children may grow up in innocent content. In the crowded slum there is little room for either peace or innocence. "The effect on children," as the author says, "is such as neither the State nor humanity will tolerate." He rightly makes this statement with emphasis. It is fundamental. *The Housing of the Nation* is cordially recommended.

[1] *The Housing of the Nation.* By Lieut.-Colonel F. E. Fremantle, M.P., F.R.C.P., F.R.C.S., D.P.H. With a foreword by the Right Hon. Neville Chamberlain, M.P., Minister of Health. London: P. Allan and Co., Ltd. 1927. (Post 7vo, pp. xiv + 193. 8s. 6d. net.)

DISEASES OF THE INTESTINES.

OF recent years the advances in our knowledge of gastric function and disorder have been so considerable that the distal portions of the alimentary canal, apart from colonic stasis and ulceration, have had comparatively little attention. This is particularly true with regard to the small intestine, and Dr. A. P. CAWADIAS's book *Diseases of the Intestines*,[2] though it includes diseases of the large bowel, will help to restore the balance. It is based on experience in the gastro-enterological clinic of the Hôtel-Dieu Hospital, Paris, and at Athens, where until recently he was physician to the Evangelismos Hospital. It is not on the lines of an ordinary textbook, and while giving plenty of references to the literature, and providing new information and ideas, shows evidence of independent thought. In the preface a distinction is drawn between a symptom-complex, a syndrome, and a disease: a symptom-complex is defined as a series of symptoms and signs grouped together clinically without any consideration as to their relationship to a lesion or functional disturbance of an organ—for example, pain in the right iliac fossa, which may be due to appendicitis, salpingitis, tuberculous glands, and so forth; a syndrome, on the other hand, is regarded as a group of symptoms and signs corresponding to functional disturbance or a lesion of an organ—for example, appendicitis or ulcerative colitis; whereas amoebic colitis is a disease.

In a discussion of the anatomy of the parts the proto-duodenum or suprapapillary portion is separated on developmental and physiological grounds from the remainder or metaduodenum, which, it is held, belongs to the mid-gut. The intestinal dyspepsias from imperfect digestion of proteins, starches, and fats are next dealt with, and reference is made to kytarinorrhoea, or the diarrhoea occurring in some individuals when they take green vegetables and fruit, because there is insufficient bacterial digestion of cellulose. The inflammatory syndromes are divided into the diffuse—such as acute and chronic entero-colitis, typhlo-colitis, and sigmoido-proctitis—and the localized—namely, appendicitis, sigmoido-diverticulitis, and proctitis, acute and chronic. Muco-membranous colitis is described as a combination of spasm and hypersecretion of mucus due to overstimulation of the parasympathetic. Its source may be in the colon, but more often is elsewhere. The motor syndromes include organic and functional colonic stasis, stenosis of the small intestine, intestinal obstruction, and functional or extra-enteric diarrhoea (nervous, reflex, anaphylactic, and endocrine). Haemorrhoids and intestinal arteritis, constituting the vascular syndromes, and duodenal (protoduodenal) ulcer, intestinal cancer, and the clinical syndromes produced by intestinal worms, are all described.

Much stress is throughout laid on the pathology and on etiological diagnosis, and though in some respects the presentations of the subject-matter may appear novel and therefore strange, it is undoubtedly stimulating. The book is, of course, better suited for the advanced student than for the beginner.

NOSE, THROAT AND EAR.

THERE have recently been published a number of new editions of books on diseases of the nose, throat and ear in the production of which, for one reason or another, the original author has taken no part, and amongst this number is the fifth edition of BALLENGER's *Diseases of the Nose, Throat and Ear*.[3] It is interesting to observe the varying success with which these tasks of bringing up to date the work of another have been accomplished. It may be assumed, and is indeed the fact, that in each case the editor was well acquainted with the author, and undertook the work in a spirit of sympathy and even of admiration. It is nevertheless impossible for another to tell how the opinion of an author might have been altered, how later experience might have affected his judgement, and what importance he might have attached to contemporary work and writing. It will generally be the rule, therefore, that the less the original is altered the better, and that if much change is really required it would be wiser to sit down and write a new book, though this might be fairly based on the old one. The latest edition of Ballenger's textbook, which has a well established reputation, has

[2] *Diseases of the Intestines.* By A. P. Cawadias, O.B.E., M.D.Paris, M.R.C.P.Lond. London: Baillière, Tindall and Cox. 1927. (Demy 8vo, pp. xiv + 299; 26 figures. 16s. net.)

[3] *Diseases of the Nose, Throat and Ear, Medical and Surgical.* By William Lincoln Ballenger, M.D. Revised by Howard Charles Ballenger, M.D. Fifth edition. London: H. Kimpton. 1925. (Med. 8vo, pp. ix + 1080; 551 figures, 32 plates. 42s. net.)

undergone few alterations, but those that have been made are thorough. For example, the new chapter on asthma, hay fever, and the related types of rhinitis is particularly good. As before, the section dealing with the ear is by far the best part of the book. Although the arrangement of the various parts is not very good, it is a brilliant exposition of aural surgery, and forms a remarkable contrast to the futile discussion on cancer of the larynx by which it is immediately preceded. If another edition should be called for this portion should be subjected to drastic treatment, if not total extirpation. A careful and detailed account is given of the important subject of the accessory sinuses, and it is in the regions of the ear and the nose that the author is at his best. The book, however, has the advantage of including rhinology, laryngology, and otology in one large volume on an exhaustive scale, and will therefore meet the constant demand for a work of such design; its continued popularity is assured.

The seventh volume of the *Handbuch* on diseases of the throat, nose and ear,[4] edited by DENKER and KAHLER, contains the second part of the section on diseases of the ear, to which three volumes are being devoted. The material in the first part (Volume VI), which contained a general review of otology, was better arranged than that in the earlier volumes dealing with laryngology and rhinology. The new volume begins with diseases of the external ear by Dr. Oertel of Düsseldorf, and follows the usual course, ending with tumours of the auditory nerve by Dr. Mann of Dresden, who has naturally based his article largely on the work of Dr. Harvey Cushing. The article on oto-sclerosis is by Professor Brühl, whose name carries much authority in this country, but it is remarkable that no reference is made to the work of Dr. Albert Gray. More attention is paid to fixation of the stapes in the oval window than is now usually accorded by British authorities. The article on facial paralysis, which includes an account of the operative measures for its relief, is purely conventional and contains no fresh suggestions. There is an excellent account of inflammation and suppuration of the labyrinth by Professor Hinsburg, who reviews the surgical treatment, while Professor Alexander deals with the non-suppurative affections of the inner ear. In spite of the faults pointed out, this volume is more satisfactory than its predecessors. The eighth volume of the handbook, which is Part III of the section on diseases of the ear, begins with a discussion of the intracranial complications of aural disease. The statistics and pathology are expounded; though treatment is not neglected, this part of the subject might from the practical standpoint have been more fully illustrated. The few illustrations other than pathological mainly depict violent attacks on the jugular bulb of doubtful justification. This paucity runs through the volume, but it is in this part that ample illustrations are really essential. Thrombosis of the cavernous sinus is dismissed with unexpected brevity. There follows a section on forensic medicine in relation to diseases and injuries of the ear. The academic character of the work is shown by the allotment of about two hundred pages to deaf-mutes and school children, whilst all the intracranial complications are included in about two hundred and sixty. The concluding articles deal with military service, malingering, and life insurance respectively. All the subjects treated in this volume lend themselves either to pathological or statistical researches, and in these respects, especially the latter, full information is supplied.

RADIOLOGY.

DR. H. A. COLWELL and MR. C. P. G. WAKELEY, in the preface to their book entitled *An Introduction to the Study of X-Rays and Radium*,[5] insist that it is to be taken to be no more than the title indicates—namely, an introduction. It is based upon a number of demonstrations given to students preparing for their final examinations, and is not intended to be in any way a complete textbook. Each of the twelve chapters is practically complete in itself, and has no particular connexion with those preceding or following it. There are also several appendixes, dealing, among other subjects, with fundamental and derived units, with electrical terms, with index notation, and with the ossification and epiphyses of bones. The main portion of the book deals with radium and x rays from all points of view other than those of actual use in diagnosis and treatment, with the exception that we are given two short chapters on certain forms of x-ray examination, and on x-ray and radium therapy. These are so short and incomplete that they are of little or no value, and it seems a mistake to have included them. We have nothing but praise for all the rest of the book; it will undoubtedly be of value to students, and more especially to those who are proposing to take one or other of the diplomas in radiology and electrology.

Dr. WILLIAM COTTON of Bristol, one of the pioneers in radiology and an authority on the stereoscopic image and on the exact meaning of x-ray shadows, has recently sent us an illustrated pamphlet entitled *Perspective in Relation to X-Ray Interpretation* (A Study in Apperception). It was communicated to the International Congress of Radiology held in London in 1925, and sets forth the author's opinions on a very difficult subject—opinions which, in some instances at any rate, are not in accord with those of most radiologists. At the same time there is undoubtedly a good deal of truth in what he has to say as regards the formation and the exact interpretation of the radiographic image; both are matters which many are apt to consider as of no particular importance and somewhat obvious. As Dr. Cotton observes, there are many pitfalls in interpretation due to non-appreciation of the manner of the formation of an x-ray picture, and we are quite in accord with his remarks on errors which are possible in the estimation of distances, and exact relative position, in cases such as the presence of metallic foreign bodies in the human body; stereoscopy is especially liable to lead to mistakes in this respect. The pamphlet is divided into a series of paragraphs which, under headings such as "Perspective," "The essential ambiguities of the x-ray picture," "The radiographic paradox," "Stereoscopy and pseudoscopy," and so on, make interesting reading, and we can commend its perusal to those interested in the subject.

An *Index and Handbook of X-Ray Therapy*,[6] translated from the original German of Dr. ROBERT LENK of Vienna by Dr. T. I. CANDY, is in two sections. In the first, which is short, are discussed in general the action of x rays, prognosis, the effects of x-ray treatment, formulae for treatment, and so on. In the second section the conditions for which x-ray treatment can be recommended are arranged in alphabetical order, and a short account is given in each instance of the mode of action, the prognosis, the accompanying and subsequent effects, the necessity or not for adjuvant treatment, contraindications, and treatment formulae. The list of conditions said to be amenable to treatment is long and very comprehensive, and we cannot help thinking that the case for x rays is somewhat overdone when such conditions as gastric ulcer, gall-stone colic, badly functioning gastro-enterostomy, and such-like, are included and reported to be very favourably influenced. The book should be useful for reference to the general practitioner, and to the expert is not without its uses.

TREVES'S APPLIED ANATOMY.

SIR FREDERICK TREVES'S *Surgical Applied Anatomy*[7] probably still holds its own as the most popular work on the subject; as a compendious summary of the essential facts

[4] *Handbuch der Hals-Nasen-Ohrenheilkunde.* Herausgegeben von A. Denker und O. Kahler. Band VII/II, und Band VIII/III. Berlin: J. Springer; München: J. F. Bergmann. 1926 and 1927. (Sup. roy. 8vo, Bd. VII, pp. xii + 804, 282 figures, R.M.72; Bd. VIII, pp. ix + 666, 107 figures, G.M.60.)

[5] *An Introduction to the Study of X-Rays and Radium.* By Hector A. Colwell, M.B.Lond., and Cecil P. G. Wakeley, F.R.C.S.Eng., F.R.S.Edin. Oxford Medical Publications. London: Milford, Oxford University Press. 1926. (Demy 8vo, pp. xiv + 203; 37 figures. 10s. 6d. net.)

[6] *Index and Handbook of X-Ray Therapy.* By Dr. Robert Lenk. With a foreword by Professor Holzknecht. Translated by T. I. Candy, M.B., B.Ch., D.M.R.E. London: Milford, Oxford University Press. 1926. (Cr. 8vo, pp. xv + 121. 6s. 6d. net.)

[7] *Surgical Applied Anatomy.* By Sir Frederick Treves, Bt., F.R.C.S. Eighth edition, revised by C. C. Choyce, C.M.G., C.B.E., M.D., F.R.C.S.Eng. London: Cassell and Co., Ltd. 1926. (Fcap. 8vo, pp. x + 727; 162 figures, including 66 in colours. 14s. net.)

of surgical anatomy it has, so far as we know, no equal, and it has one feature which is generally conspicuously absent in most summaries, in being eminently readable. It is now in the forty-fourth year of its existence and in its eighth edition. The revision for this edition has been undertaken by Professor CHOYCE, who has been careful not to interfere with the general character of the work, while making such alterations as were absolutely essential in order to bring the subject matter up to date. Since the volume is one which the student will be wise to have near at hand, size becomes a matter of importance, and Professor Choyce has succeeded in practically maintaining its original dimensions, having added only a few pages, for which illustrations are mainly responsible.

In a book of this kind figures are introduced less as mere illustrations than as explanatory of the more complicated and less familiar details of the text. For instance, the average student's knowledge of the cervical sinus would probably be assisted by a diagram affording some notion of its relation to ranula. Apart from new figures, a revision of the older illustrations has been undertaken and a considerable number replaced by better ones. A certain amount of rearrangement of the text has been deemed advisable, with the object of improving the logical sequence of the subject matter. Among the more important additions we notice a description of the structure of the teeth and of their development, and a paragraph on odontomata. The treatment of femoral hernia has been redescribed, and the stages of the operation by the inguinal route are given in detail. In the eight years that have elapsed since the issue of the last edition the advances in gastric surgery have rendered necessary a considerable enlargement of the account of the various operations on that organ; and the increase of our knowledge of the mechanism of micturition, mainly due to the researches of Barrington, have necessitated the redescription of that process. With these and many minor additions, the book practically remains the same, and will doubtless retain its well deserved popularity.

NOTES ON BOOKS.

DR. C. F. WHITE, assistant lecturer in sanitary science in the University of Liverpool, has produced a little book, *Aids to Sanitary Science and Law*.[8] It is as good an example of clear and exact thinking upon the theory and practice of sanitation, so far as this can be expressed upon the printed page, as is the Port of Liverpool, of which he is one of the medical officers, an example of excellence in the practice of port hygiene. There were formerly in the series to which it belongs two smaller books, one on sanitary science and another on sanitary law, but the volume before us is new. It will be found useful by candidates for the certificate of the Royal Sanitary Institute and Sanitary Inspectors' Examination Joint Board, and by medical students both before and after studying one of the larger textbooks, to provide first an introduction to the subject and later a means of rapid revision. It is tersely written, and the last section, that on sanitary law, is of the order that would be of use to every general practitioner, for he will find in it an account of the rights and obligations of the local authorities with which he has so often to do. Dr. White is to be congratulated upon the success of his effort to bring so much within a small compass.

Whatever views may be held about the nature of the "bacteriophage" there is no doubt of the interest of the subject, and therefore we are glad to have the writings of Dr. D'HERELLE, the discoverer of the principle, in an English translation.[9] The kingdom of the ultra-microscopic viruses and ferments is the growing point of bacteriology, and perhaps of biology in general. Within the last four years more than six hundred individuals have written articles or books about the d'Herelle phenomenon, contributing further experiment or criticism. Probably no subject has created so much bewilderment in the bacteriology laboratory in its brief history as the conflicting opinions on the nature of the transmissible lytic agent. Whether or not Dr. d'Herelle's restatement of his position will convince the dubious remains for the future to show; but disciple and critic alike will welcome this book, as will also the increasing numbers of the curious who ask "What is the bacteriophage?"

[8] *Aids to Sanitary Science and Law*. By C. F. White, M.B., Ch.B., D.P.H., D.T.M. London: Ballière, Tindall and Cox. 1926. (Fcap. 8vo, pp. viii + 316. 4s. 6d. net.)

[9] *The Bacteriophage and its Behavior*. By F. d'Herelle, M.D. Translated by George H. Smith, Ph.D. London: Baillière, Tindall and Cox; Baltimore: The Williams and Wilkins Company. 1926. (Med. 8vo, pp. xiv + 629; 6 figures. 35s. net.)

The Temple Press continues to produce new editions of its successful little *Cycling Manual*.[10] Nor is this surprising, since it is estimated that over six million people in this country ride bicycles. In the seventh edition, compiled and illustrated by the staff of *Cycling*, everything that the bicyclist should know about the construction of his machine and its care and upkeep has been brought together. He is even told how to breathe, how to keep fit, and what he should eat and drink.

[10] *Cycling Manual*. Compiled and illustrated by the Staff of *Cycling*. Seventh edition. London: Temple Press, Ltd. 1927. (Pott 8vo, pp. 114; illustrated. 1s. net.)

PREPARATIONS AND APPLIANCES.

A Method of Applying Pressure to Tonsil Beds.

DR. J. L. CYRIL DOYLE (London, W.1) writes: I have designed the forceps illustrated here to apply pressure to both the tonsil beds simultaneously. Its principal use is in cases when rather profuse haemorrhage occurs after tonsillectomy by a guillotine. The two swabs (previously attached to the free end of the forceps) are soaked in adrenaline and the instrument inserted in the mouth.

When the swabs are opposite the tonsil beds the instrument is opened and the pressure is maintained by the ratchet. After about two minutes' pressure all haemorrhage as a rule ceases and the forceps can be removed. It is not suggested that the instrument should be used as a routine after every tonsillectomy, but it should be a useful part of the armamentarium of the practitioner who undertakes tonsil operations, and should be taken with him when he operates, and used if the haemorrhage is at all profuse. The instrument is bent at an angle of 145 degrees; thus it can be used with convenience, whether the surgeon operates with the patient in the lying or the sitting position.

I am much indebted to Mr. Nicol Rankin for criticism and for testing the utility of the instrument. It is manufactured by Messrs. Allen and Hanburys Ltd., Wigmore Street, W.1.

A Glass for the Occlusion of One Eye.

Dr. Bernard Chavasse, M.B., B.Ch.Oxon. (Lecturer on Ophthalmology in the University of Liverpool), writes: The use of ground glass for the purpose of occluding one eye has three chief disadvantages: it is dazzling, very unsightly, and does not permit vision of large objects. The ideal occluding glass will therefore be free from dazzle, will allow the wearer's eye to be clearly visible through it, and will reduce the visual acuity of this eye to 6/60 and J.10, or to 1/60 and J.20, as may be prescribed by the surgeon. Such "one-way" glasses have been made for me, and I find that they form a valued addition to my trial case. This glass is an irregularly rolled plate glass, ground plano on one surface, down to any desired thinness. The effect of the irregularly rolled surface is to confer an arranged degree of very irregular astigmatism. Such a glass if laid on a sheet of paper permits vision through it of the smallest print; but if held to the eye no distinct vision is possible, either of near or of distant objects. When worn in spectacles the eye is clearly seen, but the eye sees so little that there is no desire for binocular vision; on the other hand, large, and especially moving, objects (as, for example, traffic) are visible.

The indications for the use of such a glass are, broadly, where, although there is fair or good acuity in each eye separately, the eyes cannot be used together; as in cases of weakness or paralysis of an external muscle, incorrigible insufficiency of convergence (as in post-encephalitic cases), and cases of anisometropia, as when a cataract has been successfully removed from one eye while the other still has good sight. As a rule, it will be best to start with the more pronouncedly occluding glass (1/60, J.20), and later to proceed to the other (6/60, J.10), when some psychical suppression has been developed. But if in doubt as to whether the glass in place is sufficiently occluding, the further addition of a 4-degree prism base up or down will decide the matter; for if the addition produces no discomfort the occluding glass must be adequate.

The glass is obtainable from Theodore Hamblin, Ltd., 15, Wigmore Street, London, W.1, and Rayner and Keeler, Ltd., 9, Vere Street, Cavendish Square, London, W.1.

Fine Adjustment Screw for the Sphygmograph.

Dr. Edgar F. Cyriax (London, W.1) has devised a fine adjustment screw which can be fixed to sphygmographs and polygraphs. It is brought into use after the fixation screw has been tightened. By its means the pressure of the apparatus on either side of the radial artery can be finely adjusted independently of the pressure of the pad on the artery; the observer, it is stated, is thus enabled in a few seconds to obtain the best excursion of movement from the recording needle. The screw may be obtained from Messrs. Arnold and Sons (John Bell and Croyden, Ltd.), 50-52, Wigmore Street, W.1.

British Medical Journal.

SATURDAY, APRIL 23RD, 1927.

SPINAL ENDOTHELIOMA.

THE current number of the *British Journal of Surgery* contains an able article by Mr. J. R. Learmonth on endothelioma, or, as he prefers to call it, leptomeningioma, of the spinal cord. Although this kind of tumour is of somewhat rare occurrence, it is well worth a careful study, because, if treated early enough, its removal is not usually a matter of much difficulty and the results are most satisfactory, while, if untreated, it is uniformly fatal. The growth is non-malignant, and as it is generally possible to remove it within its capsule, there is little danger of recurrence from incomplete removal. The success of the operation depends mainly on the date at which it is undertaken and the type of compression exerted on the spinal cord, a deep localized indentation producing more permanent damage than a more extensive flattening. In early cases, where the conducting paths have not suffered severely, return of function is usually rapid and complete, and in general it may be said that where paralysis has been present for less than twelve months, at least some return of function may be confidently expected. In some cases improvement is apparent at once, but it has been known to show itself after so long an interval as eighteen months after the removal of the tumour.

Mr. Learmonth's article deals with the subject from every point of view, and is, in fact, a treatise on endotheliomas of the cord, handled in a thoroughly practical manner. His account of the clinical features of the disease is especially worthy of praise. Each symptom is made the subject of intimate discussion, and the reasons for its occurrence and its anatomical basis are explained with admirable clearness and completeness. Similarly with the subject of diagnosis: the direct and the accessory means of diagnosis, such as the examination of the cerebro-spinal fluid and the radiography of the spinal column after the introduction of air or lipiodol, are fully explained. A matter of some difficulty in connexion with the diagnosis of these tumours depends on the fact that they are by no means the most frequent type of growth affecting the spinal cord. Apart from such lesions as the specific granulomata, tumours affecting the surrounding structures have to be taken into consideration equally with the endotheliomas as causes of compression. Schlesinger found in 400 cases of tumours of the spinal cord that no fewer than 107 were sarcomas and 27 gliomas or gliosarcomas, while the endotheliomas numbered only 24, or 6 per cent. of the total. This fact notwithstanding, the author has done well to limit his research to a single type of tumour, since it is along such restricted lines that neurological surgery is likely to be most surely advanced.

In an interesting historical introduction the author has traced the change of view that has occurred in recent years with regard to the nature and origin of the endotheliomas, whether of the cerebral dura mater or of the membranes of the cord. The small fibrous and gritty tumours, usually called psammomas, which are not uncommonly found springing from the cerebral dura, and, unlike the spinal growths, are of little practical importance, are usually considered to arise from the proper tissue of the dura. For some years, however, Bland-Sutton and Schmidt have held the view that they arise from buds or protrusions of the soft membranes into the dura—a view based mainly on the fact that they are met with chiefly in the same situations as the arachnoidal villi. This opinion has recently received some support from Mallory on the histological side. It has further been generally held that the proper cell elements of these tumours, the calcification of which causes their gritty character, are of mesoblastic origin. Considerable doubt has been thrown on this view by some recent observations of Harrison, which seem to point to an epiblastic or epithelial derivation of the soft membranes. Harrison excised a portion of the brain substance of *Amblystoma punctatum* with the adjoining neural crest—an epithelial structure—and transplanted it beneath the skin of the trunk. It was found that the brain tissue became surrounded with both soft membranes and dura. In a second experiment the brain substance was transplanted after careful removal of the neural crest, and in this case no soft membranes were formed, but dura alone. If these observations are confirmed there would seem to be no doubt of the epiblastic origin of the endotheliomas of the membranes of the central nervous system.

Mr. Learmonth has given a very careful account of the gross and microscopical characters of the endotheliomata, illustrated by a large number of good microphotographs; and he has appended to his article a complete bibliography from the year 1918 to the present time.

A BUDGET OF EXPEDIENCY.

MR. CHURCHILL'S third Budget is admittedly designed to meet a special non-recurring emergency, and should be judged on that basis. Usually a Chancellor's claim to approbation stands or falls by his exercise of foresight and provision for the distant as well as the more pressing requirements of the nation's finances. But there are occasions when a stop-gap Budget is justified, and there is a general consensus of opinion that this is the case this year. The coal dispute of last year, even more than the general strike which for a short time accompanied and overshadowed it, inflicted very serious damage, not only on the Exchequer, but also on the general industrial condition of the whole nation. Briefly, Mr. Churchill's task has been to repair the former as far as possible without retarding the recovery of the latter. In this dilemma he has had recourse to expedients which are ingeniously arranged to meet the emergency, but which would rightly have aroused hostile criticism if employed to meet a less abnormal situation. The permanent or semi-permanent additional taxation imposed covers a comparatively small proportion of the gap between anticipated needs and the normal yield of present taxes; the remainder is bridged by anticipating revenue, as in the case of the beer duty and income tax payable under Schedule A, and taking into use for the general Exchequer the special balance in hand hitherto held by the separate Road Fund.

This method of dealing with the situation has, of course, aroused opposition, and that not merely from those whose parliamentary privilege or duty it is to criticize and oppose. In such a case as this criticism is doubly armed: not only is the general scheme open to attack on the ground that it is unsound, lacking in the statesmanlike qualities of prevision and caution, but also on the special grounds that the particular

features of the scheme are open to specific objection. With regard to the former class of criticism—that the circumstances are not sufficiently abnormal and free from the liability of recurrence to justify methods applicable to a temporary emergency—one factor of the situation has been made clear by subsequent discussion, and that is that the country expects the Government to make it its business to see that the present financial situation does not recur. Apart from such a calamity as, for example, a war in China, the Government is expected to keep expenditure within such limits that when the next Budget is prepared it can be balanced, not only without any serious additions to taxation, but also without such adventitious aids as have now been employed. If the Government can achieve that object it will have justified its present general financial policy.

Turning to the specific means adopted, the two changes which have evoked most criticism have been the absorption of the Road Fund balances and the collection of eighteen months' property tax—or income tax assessed under Schedule A—in one year. Mr. Churchill's position with regard to the Road Fund is in theory not difficult of defence. If the income of that fund is in excess of expenditure it is reasonable enough that the Exchequer should have the use of the balance in hand, but only on the assumption that the change is not allowed to impede the proper and reasonable rate of expenditure on the objects for which the fund was specifically created. It seems probable that there may be such a tendency, and it is such apprehensions that have lent point and force to the objections raised against the change. There must be few sections of the community better qualified to speak of the importance to the general public of creating and maintaining good roads than that represented by our readers, and any risk of an arrest in the rate of improvement must be a matter of keen regret. Nevertheless, the circumstances are such as to justify a suspension of hostile criticism until the practical results can be more definitely seen.

The property tax change is justified on several grounds, as, for instance, that it is a reversion to the practice in force before the rate of tax was raised above 5s. in the £, and that in many cases the immediate payer passes on his burden to the landlord or mortgagee. These reasons are somewhat in the nature of special pleading. They are ingenious and they carry weight, but do not displace the cardinal fact, which is that one group of taxpayers are being asked to overtake a six months' tax so that the Exchequer can profit by the anticipation. Granted the necessity of some such special demand, perhaps it can be borne by the class selected as well as by any other. The discussion of these unusual features of the Budget may perhaps facilitate the passing of the provisions necessary to implement the increased wine and tobacco duties; indeed, these were generally anticipated, and have largely been discounted in advance. In such circumstances the British taxpayer's attitude is not infrequently one of relief that the fact is no worse than expectation.

The Chancellor's undertaking to simplify the income-tax system will probably evoke more general and permanent interest. Apparently he is endeavouring to reach the long-desired simplification in two stages. At present he is moving towards a simplified system of assessment, by which all income which is not taxable at the source will be assessed on the basis of the amount of the income of the previous year; when he arrives at that stage—that is, when the year 1928-29 is reached—he proposes to arrange for taxpayers to be able to make one declaration of income leading to one payment of income tax. Super-tax as such is to disappear and be merged into a surtax which shall be payable, not as at present on the basis of a separate declaration, but on an assessment based on the one declaration made for income-tax purposes. In such matters it is fairly safe to assume that time will show that a simplified system will bring its own particular inconveniences with it; at present we are content to join in the general chorus of applause for the Chancellor's intentions, and of hope for his success in an admittedly difficult field. Every Budget comes up for judgement after an interval of twelve months, though when it embodies a scheme for future taxation a remand for further evidence is sometimes justified. The present Budget is devised to meet a temporary but serious difficulty, and is therefore based on an implied promise or expectation that it shall not recur. The judgement at the bar of reality next year will therefore be definite in a special degree, and we hope that we may then be able to congratulate Mr. Churchill on the vindication of his policy. If we find ourselves in that pleasant position it will be because the Government has brought an unusual amount of determination to bear on securing economy of administration at each and every opportunity throughout the year.

POST-MORTEM EXAMINATIONS IN RURAL DISTRICTS.

In the wilds of Essex life still retains much of its primitive charm, but administration may be too primitive, and an instance is afforded by some of the conditions under which *post-mortem* examinations have sometimes to be performed. Dr. Christmas of South Benfleet at a recent inquest appealed to the coroner to press for the erection of a mortuary; he explained the situation more fully to the *Westminster Gazette*, and from the report in that newspaper it appears that the place where bodies have to lie is a disused stable attached to one of the oldest inns in Essex, and adjoining the main road; the place is full of dust and rubbish, and cobwebs hang in clusters from the roof. The *post-mortem* table is a shutter on two trestles, and light is obtained only by leaving the stable door open. An old stable bucket filled with water and a little hot water supplied by the landlady of the inn complete the equipment. It appears that requests for better conditions have been made on many occasions to the local authority, the Rochford Rural District Council, and for many years the rural council is stated to have promised to build a mortuary; but promises materialize slowly in primitive spots, even when barely thirty miles from London. By a coincidence we have received this week from Dr. Cyril Helm of Great Horkesley, Colchester, a letter strongly expressing his view that "the Ministry of Health should give its attention to the conditions under which *post-mortem* examinations are made in rural districts. At the present time conditions are no better than they were in the Middle Ages, and a *post-mortem* examination may have to be carried out in some extremely dark and dirty barn, shed, or garret. Done under such conditions an examination is not only useless, but is also offensive to common decency." To remedy this state of things he expresses the opinion that "it should be compulsory for all *post-mortem* examinations to be done in a proper room in the nearest big town, and that a trained attendant should be provided by each county to assist. Unless the cause of death is very obvious it is almost impossible to find it under the conditions" described. That reform is necessary everyone will agree, and we are glad that the *Westminster Gazette* has taken the matter up and brought it to the notice of the public.

Whether Dr. Helin's suggestion is the best remedy we are not prepared to say, but in these days of rapid motor transport it would seem to be feasible for the doctor to get quite quickly to the nearest town to carry out the instructions of the coroner.

DEATH REGISTRATION AND CREMATION.

IT may not be untimely to remind the profession that two Acts passed during the last session of Parliament, the Coroners (Amendment) Act and the Births and Deaths Registration Act, come into force, the former on May 1st and the latter on July 1st next. The provisions of these Acts were discussed in a leading article on December 25th last (p. 1233). Under the Coroners Act increased fees will be payable to medical men conducting *post-mortem* examinations or giving evidence in connexion with inquests; and the Home Secretary is empowered to "make rules for regulating the practice and procedure" in these connexions. These regulations have not yet been issued, but it is understood that they will be provisionally made by the end of the present month. They are of some importance to the profession. In connexion with the Births and Deaths Registration Act, inquiries are proceeding with regard to a possible international nomenclature of the causes of death, and with regard to some alteration of the form of certificate of death to get rid of the terms "primary" and secondary" as used on the present certificate, with the intention of securing a more uniform and precise statement of the causes of death, whether immediate, more remote, or merely contributory. It is relevant to call attention to some recent publications of the Cremation Society, especially to a pamphlet by Lord Salvesen, P.C., K.C., on "The medico-legal aspect of cremation." The Home Office regulations relating to the disposal of the dead by cremation were issued in a revised form in 1920. The requirements under these regulations, which must be complied with before a body is cremated, are very stringent, possibly even overstringent if cremation is to be preferred and encouraged as a public health measure to replace burial. For the detection of foul play they would appear to be complete, for they would almost inevitably reveal any suspicious circumstances attending the death. It is almost inconceivable that, say, a poisoner would choose this method of disposing of the body of his victim rather than the method of burial, which scarcely affords adequate safeguards in all cases against the body being put under the earth without the cause of death having been accurately ascertained. Further legislation is still needed to carry out the policy of the British Medical Association in this regard. The relatively large acreage in the neighbourhood of towns required for burial grounds is also a matter of importance at the present time, when space for games and recreations, both for school children and adults, is so difficult to obtain. Lord Salvesen calls attention to a further requirement of the existing law, that no crematorium shall be constructed within fifty yards of any public highway. An ordinary cemetery may adjoin a public road; and a modern crematorium need not be either a source of nuisance or an eyesore. This legal provision in practice often makes it almost impossible to find a site for a new crematorium.

THE LAST CENSUS: ENGLAND AND WALES.

THE General Report on the Census of England and Wales, 1921, published on April 19th,[1] completes the series of official volumes issued in respect of that census. The population numbered rather more than 37¾ millions, 649 to each square mile on the average, or about an acre a head—a density greater than that of any country in the world for which statistics are available. Though an increase has been recorded at every census, the rate of growth between 1911 and 1921 was smaller than in any preceding decade, for which the adverse effect of the war must be accounted mainly responsible, both in the losses amongst men of military ages and in the unprecedented fall in the birth rate. It compares favourably in this respect, however, with other European belligerents, whose populations generally advanced at a much slower rate or even declined. Nearly 80 per cent. of the population were enumerated as living in urban areas, and of these practically half were found in comparatively dense aggregates represented by the forty-six towns each containing more than 100,000 persons. The rate of growth of the smallest towns is above the average for the whole country, and the rate appears to increase as the towns get larger, until the populations reach a figure in the neighbourhood of 100,000. After this the rate of increase tends to slacken, suggesting that 100,000 roughly marks a limit of effective aggregation beyond which the advantage of further accretion begins to be offset by counterbalancing disadvantages. Prominent amongst the towns which showed little increase or which decreased during the decennium are those associated with the textile industry in Lancashire and Yorkshire. Notwithstanding the house shortage, the total number of rooms available for habitation is greater in relation to the population than it was in 1911. Families are, on the whole, smaller than they were ten years ago, and since small families are able to command a higher standard of housing than the larger, they have absorbed a greater share of the available house room than they had in 1911. To this change and to the uneven distribution of accommodation throughout the country the present situation is believed to be in large measure due. The proportion of population living under the overcrowded conditions of more than two persons in a room was 9.1 per cent. in 1911 and 9.6 per cent. in 1921; in Northumberland and Durham 30 per cent. of the population are in the overcrowded category, while in London the proportion is 16 per cent. The depletion of males at early adult ages and the deficiency of very young children of both sexes are clearly shown in the age curves. The losses at the younger ages automatically result in a general ageing of the population as a whole, a change which has been further accelerated by the improved vitality of the middle-aged registered in recent years. The war has been responsible for a greatly increased disparity in the numbers of the two sexes, the surplus of women now exceeding 1,700,000, as compared with less than 1,200,000 in 1911. Amongst the marriageable population the disparity is greater, and between the ages of 30 and 35 there are 1,470 unmarried females for every 1,000 unmarried males. In a section on occupations in different parts of the country it is shown that a very marked decrease in child labour has occurred. The number of aliens has fallen from a proportion of 790 per 100,000 total inhabitants in 1911 to 602 in 1921, though immigration from Belgium and the United States of America has increased. More than half the total of foreigners were enumerated in the county of London, and nearly one-third of these were in the metropolitan borough of Stepney. A new dependency and orphanhood section, primarily designed to provide data for the framing of the national scheme of widows' and orphans' pensions and allowances, contains a survey of the sizes, age constitution, and distribution of families in relation to their parents; the average for all married men was only 1.27 children apiece. More than 43 per cent. of the married men returned no children under 16, while in another 23 per cent. there was one child only. Miners returned the largest families on the whole, but their average was only 1.82 for each married man, while in the case of professional men the average was 0.90.

[1] H.M. Stationery Office. Price 5s.

CONCERNING ANEURYSMS.

IN the third Gordon Bell Memorial Lecture[1] Professor Oskar Klotz of Toronto summarized the results of some twenty years' work on aneurysm and the diseases of arteries. In dealing with the history of aneurysm he makes the interesting point that though Galen, Aetius, and Antyllus described the condition, it chiefly affected the peripheral arteries and was traumatic in origin until syphilis, whether imported from America by Columbus's crews in 1493 or not, became epidemic in Europe at the end of the fifteenth century, when aortic aneurysm occurred with a frequency such as had never before been known. The steps by which the etiological importance of syphilis was established are traced in detail. The anatomical distribution of luetic aortitis is fully described; it is most frequent in the ascending part of the arch, below which it diminishes; there is often an abrupt transition from a diseased to a healthy vessel at the level of the diaphragm, as if the virus met with some difficulty in traversing the lymphatics at this point; the commonest spot for syphilitic disease of the abdominal aorta is the coeliac axis, where there is a rich network of lymphatics. The difficulty of therapeutically eradicating the *Treponema pallidum* from the aortic walls is compared to that in parenchymatous syphilis. It is pointed out that syphilitic disease of the cerebral arteries is less frequent now than it was reported to be some years ago, and probably many cases of miliary aneurysms (which by a curious misprint appear as "military"! aneurysms) were wrongly regarded as syphilitic. Fusiform aneurysms are almost always due to syphilitic aortitis, and can now be recognized by *x* rays before the symptoms—usually of aortic incompetence and cardiac failure—became evident. In his discussion of aneurysms resulting from acute infections, Professor Klotz records eleven cases under 15 years of age, three being associated with endocarditis (two rheumatic), two tuberculous, two congenital cirsoid, a congenital aneurysm of the sinus of Valsalva, and three false aneurysms from trauma. Wars make traumatic aneurysm more common, but popliteal aneurysms—formerly, as shown by Crisp's statistics seventy years ago, especially frequent in cavalry and post riders from injuries in the saddle—are curiously rare now. Arterio-sclerosis of non-luetic origin is comparatively unimportant as a cause of aneurysm, except of the dissecting aneurysms, which are usually due to senile changes, and may be called "the aneurysms of old age." This interesting lecture closes with a summary of our knowledge of aneurysms in animals, from which it appears that, apart from parasitic worm infections in dogs, there is not any disease in the lower animals which specially affects the arterial tissues in the way that syphilis does in man.

RHEUMATIC MANIFESTATIONS IN CHILDHOOD.

AN illustration of the widening interest which is being taken in rheumatic heart disease was afforded by the invitation extended by the Royal Sanitary Institute to Dr. Dingwall Fordyce to read a paper on rheumatic affections in children at a sessional meeting on April 8th. Dr. Fordyce emphasized the need of focusing attention on this problem with a view to inaugurating a campaign, and referred to the stimulating value of the Report of the Science Committee of the British Medical Association published last July. He said that although the etiology of acute rheumatism in children was still obscure, it was generally agreed that the disease was a definite entity, and that there was a common and insidious form which tended to cause mitral stenosis. In contrast with such infections as scarlet fever and diphtheria, rheumatism was characterized by the existence of a recognizable diathesis—a most important consideration from the prophylactic standpoint. Moreover, during the first two years of life the specific group of symptoms did not occur. This indicated that either there was an unsuspected infantile rheumatic infection, or that the first two years were most important in determining the development of the rheumatic diathesis. Carditis, the dreaded sequel of rheumatic infection, commenced usually in childhood. Dr. Carey Coombs, dealing with 600 cases of cardiac rheumatism, had found that the onset occurred most often between the ages of 5 and 15. Childhood, then, was the period of danger, but if properly guarded the prognosis was good. At this age the patients were usually mentally alert, so that the educational as well as the physical prognosis was distinctly promising. The prevention of rheumatism comprised all measures which conduced to healthy infancy and childhood, coupled with the recognition of a particular diathesis; the transitory ailments of this period should be completely cured, and all foci of infection, such as carious teeth, tonsils, and adenoids, must be eradicated. In addition to these measures, suitable mental environment and training were necessary. Child welfare work, by filling gaps in the home life and serving to co-ordinate the various official agencies, was the first step in the prevention of rheumatism, its value lying in its far-reaching educative and moral effects. But many gaps in this educative sphere still needed bridging. Up to the age of 5, despite the existence of numerous clinics, the child was almost solely under home control. If definite signs of rheumatism occurred at this, the usual age for beginning school life, there must be full and effective treatment. Rest, the most powerful agent in prophylaxis, should be properly valued and rightly administered. Mentally active children must not be unduly stimulated. Prolonged and close medical supervision was necessary, and also closer correlation of education and treatment. Intimate co-operation between the various medical and other agencies dealing with children would lead to medical practitioners becoming more expert; research would be facilitated and the treatment of patients be greatly improved. Dr. Fordyce deplored the fact that child welfare work was more dependent on sentimental considerations and the appearance in the lay press of highly coloured accounts of laboratory discoveries than on clinical medicine. This could be redressed by better co-operation of the medical and lay agencies concerned. The dentist, rhinologist, and laryngologist should be more often consulted, and the urgent call for more hospital beds for children undergoing such minor operations as tonsillectomy must be met. Increase in the number of beds available for rheumatic and cardiac patients was also essential. Special cardiac clinics and the provision of vocational training for cardiac patients were much needed; even from the scholastic viewpoint a closer co-operation between general practitioners, hospital physicians, and school medical officers was highly desirable.

OPHTHALMIC HOSPITAL OF THE ORDER OF ST. JOHN OF JERUSALEM.

THE British occupation of Palestine, by facilitating travel in that country, had added much to the work of the Ophthalmic Hospital of the Order of St. John of Jerusalem. The inauguration three years ago of a series of ophthalmic clinics made the work more widely known, and the improvement in the roads and railways, together with the increased numbers of motor cars, enables patients to travel considerable distances for treatment. It is now being found very difficult to deal with the large crowds who apply daily for treatment. In his annual report for 1926 the warden of the hospital, Lieut.-Colonel J. C. Strathearn, M.D., states

[1] Klotz, Oskar: *Concerning Aneurysms.* University of Toronto Studies: Pathological Series, No. 7. 1926. The University Library. Published by the Librarian. Pamphlet, pp. 74.

that many previous records have been broken; 18,127 new patients were treated in 1926, as compared with 16,640 in 1925, 1,499 being admitted as in-patients and 4,234 operations being performed. In one day in September 628 cases were dealt with, the incidence of acute conjunctivitis being very high in this and the previous month. Trachoma is still very prevalent, and the bulk of the operative work was concerned with its treatment. A children's clinic was started in July. It was hoped to build an annexe to the hospital, and over £1,500 had been collected for this purpose, but difficulties arose in securing the site desired, and no progress was made last year. A house with garden has been presented to the Order, and this may possibly be used to accommodate some of the hospital staff and to provide a small dispensary. The urgently needed drainage scheme for the hospital awaits the laying down of a new sewer for the south-west part of Jerusalem. The six ophthalmic clinics instituted by the Palestine Government at Nablus, Tulkeram, Acre, Ramleh, Gaza, and Beersheba have been supervised by the staff of the hospital, and during the year under review dealt with 13,814 new patients, 2,684 operations being performed. During the visit to Jerusalem last spring of the Sub-Prior and other executive officers of the Order the warden of the hospital was invested as a Knight of Grace.

ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION.

THE fifty-eighth annual meeting of the Canadian Medical Association will be held at Toronto from June 13th to 18th, in conjunction with the Ontario Medical Association, the Canadian Public Health Association, the Canadian Tuberculosis Association, the Canadian Society of Anaesthetists, and the Canadian and Ontario Radiological Societies. The scientific proceedings will include general sessions and a number of sectional meetings, the sections being: Anaesthetics; Eye, Ear, Nose, and Throat; Medicine; Obstetrics and Gynaecology; Pathology and Bacteriology; Pediatrics; Public Health; Radiology; and Surgery. The second Listerian Oration will be delivered on June 17th by Sir C. S. Sherrington, Waynflete professor of physiology at Oxford. Other visitors from Great Britain who are taking part in the conference include Sir G. Lenthal Cheatle, Dr. J. Strickland Goodall, Dr. A. L. Fleming, and DR. S. Gilbert Scott, who will represent officially the British Medical Association. The Sections of Pathology, Radiology, Medicine, Anaesthesia, and Surgery will combine for a discussion of the gall bladder; and pathological demonstrations are to be arranged with special reference to the problems of the medical practitioner.

Nova et Vetera.

EUTHANASIA.

THE thesis has often been propounded that in cases of incurable and painful disease it should be permitted to the medical attendants, using their own discretion and subject to the consent of the patient's relatives, to terminate suffering swiftly and painlessly. Euthanasia is no new conception, nor can it be said that recent balancing of the pros and cons has revealed any fresh or more potent argument in its favour than those that have been advanced from time to time down the centuries. However ready they may be to agree to the proposition in the abstract, very few doctors, either alone or in council, would be prepared to accept the heavy responsibility which would be theirs were the "doping to death" of the hopeless case to become a recognized custom established with full legal sanction. This question has been debated in the past by men of diverse interests and of all shades of opinion. Sir Thomas More in *Utopia* has revealed his own quite definite view in these words:

"When any [Utopian] is taken with a torturing and lingering pain so that there is no hope of recovery or of ease, the priests and the magistrates come and exhort them that since they are now unable to go on with the business of life and are become a burden to themselves and to all about them, so that they have really outlived themselves, they should no longer nourish such a rooted distemper, but should choose rather to die since they cannot live but in much misery; being assured that if they deliver themselves from their prison and torture, or are willing that others should do it, they shall be happy after their deaths. . . ."

Three hundred years later we find Lionel Tollemache, in his well known essay *The Cure for Incurables*, writing as follows:

"If a summary remedy could be applied to this suffering there would be the further advantage that persons of a morbid and brooding nature might gain confidence through life and that knowing that death would be deprived of its sting, they would have a sort of negative stimulus or (if I may so say) an anti-preventive to exertion. Then again, we must consider the friends, who, besides the immediate suffering of nursing the sick man often permanently impair their constitutions and nervous systems, and who moreover are thus exposed to a sort of moral suicide; I mean they curtail their own powers of usefulness far more than a dose of laudanum would curtail those of their dying friend. . . . On the whole it cannot be doubted that the benefits resulting from a change in the law would be simply enormous."

Thus have spoken the statesman and the philosopher of widely different ages. What of the poet? Joseph Severn, the friend of Keats, who was with him at his lonely death in a foreign land, has left the following passage on record:

"One day he broke down suddenly and demanded that this foreseen resource should be given him. The demand was for the phial of laudanum I had bought at his request at Gravesend. When I demurred he said to me that he claimed it as his own and his right, for, he added, with great emotion, 'As my death is certain, I only wish to save you from the long miseries of attending and beholding it. It may yet be deferred and I can see that you will thereby be stranded through your lack of resources and you will ruin all your prospects. I am keeping you from your painting and as I am sure to die, why not let me die now? I have now determined to take this laudanum and anticipate a lingering death while emancipating you.' As I still refused to let him have the laudanum he became furious . . . and yet in all this there was no fear of death, no want of fortitude or manliness, but only the strong feeling on my account to which he regarded himself and his dying as secondary."

Again, a quotation may be made from the memoirs of a famous musician, Berlioz:

"I have lost my eldest sister; she died of cancer of the breast after six months of horrible suffering which drew heartrending screams from her day and night. My other sister, who went to Grenoble to nurse her, and who did not leave her till the end, all but died from the fatigue and the painful impressions caused by this slow agony. And not a doctor dared to have the humanity to put an end to this martyrdom by making my sister inhale a bottle of chloroform. This is done to save a patient the pain of a surgical operation which lasts a quarter of a minute, and it is not had recourse to in order to deliver one from a torture lasting six months. . . . The most horrible thing in the world for us, living and sentient beings, is inexorable suffering . . . and we must be barbarous or stupid, or both at once, not to use the sure and easy means now at our disposal to bring it to an end. Savages are more intelligent and more humane."

In striking contrast to this we have the exactly contrary opinion of the great Napoleon recorded during a conversation at Elba with Lord Ebrington:

"I have often thought since on this point of *moral* and have conversed on it with others et je crois qu'au fond il vaut toujours mieux suffrir, qu'un homme finisse sa destinée quelle qu'elle soit. I judged so afterwards in the case of my friend Duroc, who, when his bowels were falling out before my eyes repeatedly cried to me to have him put out of his misery. Je lui dis, je vous plains, mon ami, mais il n'y a pas de remède, if faut suffrir jusqu'à la fin."

And now, in the third decade of the twentieth century, after a war beside which Napoleon's campaigns were mere skirmishes, this same question is being soberly debated in the public press by priest and layman, surgeon and physician, and no practical outcome in the way of revolutionary change in the practice of centuries is likely to be the result of it. If we were to draw any inference from the above quotations it would be that, whereas to the mind of the theorist, be he statesman, philosopher, poet, or musician, euthanasia commends itself as not only desirable but even necessary, yet to the man of action, the man most likely to be called upon to translate the theory into actual practice, the idea is almost abhorrent. That is very probably how it strikes the mind of twentieth century man also.

C. J. G. T.

THE AUSTRALASIAN MEDICAL CONGRESS

OF THE

BRITISH MEDICAL ASSOCIATION,

DUNEDIN, NEW ZEALAND.

(Concluded from page 740.)

THE SCIENTIFIC SECTIONS.

SECTION OF OPHTHALMOLOGY.

DR. A. M. MORGAN, President of the Section, delivered an address on the causes of concomitant strabismus. He thought that the theories of Donders and Worth did not explain why hyperopes sometimes had divergent squints and myopes sometimes had perverted squints, nor why vertical squints occurred. These theories also did not explain why all squints were not cured by a full correction of the refractive errors as, theoretically, they should be, nor why the patients might have a squint in any direction without any error of refraction at all. In his opinion the three causes of concomitant squint, in the order of their importance, were weakness of the fusion sense, heterophoria, and hypermetropia. The first only was essential, but must be accompanied by one of the others. The determining factor in the development of a squint was the relation between the desire for fusion and the effort needed to align the eyes correctly. If the desire for binocular vision was greater than the effort there would be no squint. If the effort was greater than the desire a squint would result. Hypermetropia played a very minor part in the causation of convergent squint. Myopia as an error of refraction had no part in the causation of divergent squint, though it might tend indirectly to exophoria in myopic eyes.

Dr. H. F. SHORNEY (South Australia) discussed the etiology and treatment of non-suppurative intra-ocular affections, including retrobulbar neuritis. He dealt with the etiology under the headings of affections of the teeth and gums, tonsils, and accessory sinus diseases, mentioning the frequency of infection of the optic nerve and nerve head in sinus affections. His experience pointed to the occurrence of a descending retrobulbar inflammation, accompanied as it not infrequently was by some inflammatory reaction of the nerve head, rendered visible by the ophthalmoscope. Other etiological points were: metabolic diseases, diseased organs producing altered chemical action from hypersecretion or hyposecretion, parasitic causes, infection from penetrating wounds, and endogenous infections. After describing the routine treatment of acute iritis, he gave details of the milk injection therapy. He reviewed the substances used in the treatment of intra-ocular infection, mentioning chemical agents such as afenil, alvonal, urotropine, argoflavine, rivanol, atophan, atophanyl, bismogenol, spirovismol, sodium cacodylate, solarson, and astorin. The biological remedies he had tried were milk, aolan, and caseosan, vaccineurin, artheigon, insulin, and sanocrysin. He had also employed for light treatment the quartz lamp, Solex lamp, the Koppe blue light, and Roentgen rays.

Dr. J. RINGLAND ANDERSON (Victoria) gave an account of red-free ophthalmoscopy in theory and practice. He discussed the history of the discovery of the yellow macula leading up to the work of Professor Vogt and his use of the red-free light in the examination of the macula. He described the appearance of the macula in the enucleated eye, the value of the yellow pigment as a filter, the appearance of the macula with the ophthalmoscope, and the changes in disease. The method of examination with the red-free light was the only one which made visible the yellow macula and its changes in disease, especially in the form of oedema of the nerve fibres and retinal atrophy, the fine retinal plexuses, and the minutest haemorrhages and alterations in vessel walls.

Dr. E. W. HARTY (New Zealand) introduced the subject of ophthalmology and the consulting optician in view of the registration of sight-testing opticians, which was receiving consideration in New Zealand. He quoted W. S. Inman, who stated that while there was a tendency to break away from accepted beliefs about the physical origin of certain diseases, ophthalmology seemed to have lagged behind. Headache was not invariably relieved by corrected errors of low refraction, and other factors seemed to have been insufficiently investigated. Emotional stress was a factor which might be a cause, also heredity, and the stress of modern civilization in school and industry. While great attention was being paid to septic infections, common maladies which were so often the forerunner and in many cases the cause of inflammatory eye conditions and errors in refraction did not appear to receive the attention they merited. He mentioned certain degrees of myopia as inviting careful search for diabetes, glaucoma, and early cataract. The diagnosis of early neurovascular changes was important, and it was these finer points which appeared to constitute the principal objection to granting State recognition to sight-testing opticians. He quoted various authorities in England, America, the Continent, and Australia who were opposed to the recognition of sight-testing opticians.

Dr. ERIC L. MARCHANT (New Zealand) described the operative treatment of lacrymal obstruction. The Washer-Toti operation was the most satisfactory in his experience for lacrymal obstruction. He found it better than West's in cases of congenital obstruction when the sac was small, and he obtained a much wider opening for drainage by this method. He emphasized the necessity for laying open, not only the inner sac wall, but also the entire length of the nasal duct. He tented in the inner sac wall by a probe through the canaliculus, and then transfixed the sac by a straight needle into the nasal cavity, dividing the sac vertically external to the needle. To open up the nasal duct he passed a slightly bent No. 1 knitting pin, and placed a gouge externally to it, ripping out the inner wall. He emphasized the importance of making a large opening and insuring that the opening in the sac coincided with that in the bone.

Dr. CYRIL DIXON and Dr. L. J. C. MITCHELL (Victoria) contributed jointly a report of a series of cases of retinitis pigmentosa occurring in one family. The father, aged 54, and the mother, 56, had six sons and four daughters. Of the sons, one, aged 30, was normal; another, 28 years of age, presented gross deafness, the vision in both eyes being 6/18 with typical retinitis pigmentosa. A third son had died at the age of 21, being blind and deaf; another son, aged 19, was normal, and the sixth son, aged 16½, had right vision 6/9, left vision 6/12. His field was contracted and he suffered from typical end-organ deafness. Of the daughters, three were normal and one, aged 15, had 6/9 vision in both eyes, and definite retinitis pigmentosa with typical gross end-organ lesion. The father had been deaf since the age of 29, but had no eye defects. The mother was normal. The father had had two deaf and dumb cousins, both of whom were dead. The Wassermann test was negative in all cases.

Dr. Z. SCHWARTZ (Victoria) reported a case of squamous-celled carcinoma of the limbus extending over the cornea. A woman, aged 43, attended hospital in February, 1924, the right eye having a vision of 6/5 and the left 6/12. On December 22nd, 1925, when the left eye was examined, there was found a transverse growth across the left cornea, 6 millimetres wide, extending from one limbus to the other. The conjunctiva appeared free; the cornea above and below the growth was transparent. The appearance of the growth was fleshy; it was raised from the cornea with large blood vessels extending across it like an overgrowth of conjunctiva. The eye was congested and there were no enlarged lymph glands. The eye was excised with considerable portion of conjunctiva, and one month later one application of deep x-ray therapy was given. Pathological examination showed the growth to be a squamous-celled carcinoma.

Dr. A. J. HALL (New Zealand) gave a lantern demonstration of fundus diseases and read a note on the pathology of penetrating wounds of the eyeball. He summarized the findings of John Marshall of Glasgow in a number of cases of penetrating wounds, and illustrated them by a series of photographs, stereo-photographs, and microscopic slides. He classified the infection of such wounds as

panophthalmitis, vitreous abscess, plastic irido-cyclitis, and proliferative fibrosis arising from the cut tissue of the wound. In each class a brief account was given of the principal pathological conditions found. Attention was drawn to the probability of an endogenous source of infection in some cases. The pathological changes following retention of metallic bodies were purposely excluded from the paper, which dealt with infection only.

SECTION OF OTOLOGY, RHINOLOGY AND LARYNGOLOGY.

Dr. ROBERT PULLEINE (South Australia) sketched the history of the work during the past fifty years on the anatomy of the vestibular apparatus and the neurophysiology of the internal ear. He described in some detail the relations of the vestibular nerve and the passage of the fibres from the nuclei of the third and sixth nerves to join the fibres of the fourth and sixth nerves to form the vestibulo-ocular tract. He also defined the components of the vestibulo-cerebellar-cerebral and the vestibulo-spinal tracts. On the basis of the anatomical and physiological findings he endeavoured to analyse the slow component of nystagmus. The tests employed by him were the rotatory and the caloric. He concluded that labyrinthine conditions could be clearly distinguished from acoustic tumours, that acoustic tumours gave rise to a definite syndrome, that cerebellar neoplasms were capable of differentiation, and that in toxaemic conditions due to tobacco and dental infections there was an absence of normal vertigo and past pointing. Hysterical forms were rare. He also dealt with spontaneous vertigo in ophthalmic conditions, such as anisometropia when the amblyopia ex anopsia had not evolved, and when heterophoria, especially the vertical variety, could be eliminated by the vestibular tests.

Dr. H. M. JAY (South Australia) read a paper on the diagnostic importance of the vestibular reactions. The vestibular tests appeared to have a very definite value as an aid to diagnosis, provided that too much was not expected of them. Lesions affecting the labyrinth and eighth nerves and the cerebellar cortex should be distinguishable in the great majority of cases. Judging from the fact that the only two proved peduncular lesions in Dr. Jay's series had been correctly diagnosed, it appeared that the tests were of value in these conditions. No proved lesions of the pons or medulla were included in his series, and in consequence no conclusions could be drawn in regard to them. He added that negative findings were of distinct value in eliminating disease of the brain stem.

Dr. T. A. MACGIBBON (New Zealand), in a paper on chronic spheno-ethmoiditis, stated that the importance of this condition lay in the fact that many unexplained diseases had their origin in hidden septic foci. After describing the classification of types and their symptoms, he dealt with the treatment. In the catarrhal type it was sufficient to remove obstructions such as a deviated septum or a portion of the middle turbinal. A long course of instillation of argyrol was useful. Diet, fresh air, non-smoking, and plenty of exercise were indicated. Where polypi were associated with this type, the only rational method of treatment was a complete exenteration of the ethmoid labyrinth and opening up the sphenoid. There were two types of latent spheno-ethmoidal suppuration—the mild and severe. In the mild type with little toxic absorption climatic and local treatment should be tried before operation. Argyrol drops should be instilled at bedtime. In the severe type, where toxaemia was marked, aeration and efficient drainage were to be aimed at. The treatment of manifest empyema was the same as for the severe type of latent suppuration. Closed empyema was treated by causing shrinking of the mucous membrane by cocaine and adrenaline or antipyrin. Flushing with warm Dobell's lotion might cure temporarily. If pain returned the affected cells should be opened up at once; if there was no pain it was best to wait till the acute stage passed off. Spheno-ethmoiditis in children was treated by removal of the remains of the tonsils and adenoids by the radical method, the patients being left to recover by medical and climatic treatment. Dr. MacGibbon then described various operations in detail, including Ballenger's, Mosher's frontal ethmoid, Moure's external ethmoid, Sluder's and Skillern's, and his own operation. He emphasized the importance of preparation for the operation, and careful after-treatment.

Dr. R. PULLEINE (South Australia), in a paper on conservatism in the treatment of middle-ear disease, stressed the necessity of early paracentesis in acute otitis media and referred to the efficacy of counter-irritation over the mastoid. He said that the younger the otologist the more likely he was to consign summarily a chronic discharging ear to surgical intervention. He dealt with hyperkeratosis of the middle ear and attic. After insuring ventilation of the tympanum and the removal of septic foci he described various methods of treatment in detail, including pertubal lavage, high-pressure syringing, zinc ionization, iodine vapour insufflation, antiseptic ear baths, and closure of the Eustachian tube and of the tympanic perforation.

Dr. HAROLD HAYS (New York) read a paper on the management of acute otitis media. He said that the interpretation of symptoms of acute otitis media was most important, and great attention must be paid to them and to the proper examination of the membrana tympani and mastoid process. The chief symptoms were pain and temperature. Of primary importance was the establishment of as free drainage as possible, which meant a wide and extensive opening of the membrana tympani, sometimes even when spontaneous rupture had occurred. If the drum had to be incised, an anaesthetic should invariably be employed, no matter how young the patient, a transient general anaesthetic, such as gas and ethyl chloride, being used. The incision in the drum should be a sweeping one, extending from the upper posterior part forward and downward and then upward to Shrapnell's membrane. In severe cases *x*-ray photographs taken every few days were useful. The patient was instructed to keep the middle ear clean by frequent douches; sometimes frequent mopping out was advised or suction was used. Several specific treatments used by the physician were of value; these included cleansing and abortive treatment, zinc ionization, acriviolet solutions, mercurochrome, local vaccine therapy, ultra-violet rays, and the restoration of hearing. In a certain number of cases the discharge persisted and the general physical condition remained below par. In these cases a mastoid operation was a conservative procedure.

Dr. ERIC GUTTERIDGE (Victoria) read a paper on paranasal sinusitis in children. He discussed the embryology and anatomy of the individual sinuses before he approached the clinical aspect of sinusitis. This condition was frequent in children; it had protean manifestations and attacked the respiratory tract in the majority of the patients. The vast proportion of respiratory diseases owed their origin and persistence to sinusitis and could be remedied by treatment of the nose and throat. The effects of enlarged and infected tonsils and adenoids were largely due to the accompanying sinusitis, and removal of these lymphatic infections usually resulted in cure. In his series 85 per cent. of the patients had been dealt with in this way. Dr. Gutteridge was particularly concerned with the 20 per cent. in whom tonsillectomy had failed to cure the sinusitis; after some months it was found that 21 per cent. were much improved, 30 per cent. were improved, 17 per cent. were in the same state, and 32 per cent. were not seen again. This meant that of those of whom a report had subsequently been received, 80 per cent. were improved or relieved. Whether the children had been permanently cured or their symptoms temporarily relieved, it was impossible to determine. The gain to their health and the relief to their lungs and developing nasopharynx were of inestimable value. A similar treatment would probably be successful on a second occasion. There remained a residuum of patients who would require further treatment. The Caldwell-Luc operation had been performed on 14 per cent. of the children, and the mucosa had been found to be polypoid in 7 per cent. No complications, such as meningitis, frontal osteo-myelitis, or orbital abscess, as noticed by Skillern and others, had been seen in his clinic.

Dr. GEORGE PINESS (Los Angeles) read a paper on allergy of the respiratory tract. He sketched the history of allergic disease and then proceeded to the etiological classification of asthma and hay fever; food allergy was the most common cause of perennial asthma and hay fever,

while pollen allergy might be seasonal (spring or fall) or perennial. Animal dander, orris root, and pyrethrum were frequent causes of allergy. For diagnosis he relied on the family history, the clinical history, the physical examination, *x*-ray examination, laboratory research, and the skin tests. He described the scratch method and the intradermal method of performing the skin tests, and stated that the first essential was the use of test proteins known to be active; the commercial food proteins had proved unreliable in many cases. The average patient was tested with 350 proteins. He then dealt fully with specific treatment based on the results of the skin tests.

SECTION OF NAVAL AND MILITARY MEDICINE AND SURGERY.

This Section joined in two combined meetings, and one day was devoted to a staff ride, which was discussed on a subsequent morning. Forty-five army medical officers took part in this medical tactical exercise and various problems were dealt with arising out of a supposed attack by foreign troops.

Colonel F. A. MAGUIRE, D.S.O., Deputy Director of Medical Services, Australian Military Forces, read a paper on medical work in the field, with special reference to the battle of Messines. He summarized the main requirements for medical field work as follows: (1) rapid evacuation, (2) provision of warmth, (3) ample supply of hot fluids, (4) gentle handling. These necessitated good staff work, ample supplies, and the thorough training of personnel. He discussed the battle of Messines, in so far as it affected Australian and New Zealand troops, to show how it had provided every opportunity for the practice of the principles enunciated. It was a "set piece"; the plans were laid for it months ahead, and preparations were developed on an elaborate scale. Colonel Maguire described in detail the arrangements made for this operation, and gave figures of the number of casualties dealt with. He considered that the staff work throughout was excellent, and that the whole operation was a model of what medical organization should be.

Colonel R. TRACEY INGLIS, C.B.E., V.D., Director of Medical Services, New Zealand Military Forces, gave a lucid explanation, illustrated by diagrams, of medical organization in war.

Lieutenant Commander W. E. J. PARADICE, Royal Australian Navy, described cases among naval patients of interest from a baeteriological point of view, and gave particulars of Vincent's angina and allied conditions met with at the naval depot at Garden Island, New South Wales. He classified Vincent's angina affecting the tonsils into three groups: (1) In the pure infection the ulcer was almost white and very hard and friable; there was only slight constitutional disturbance. Spirochaetes and fusiform bacilli were present in pure culture. (2) In a mixed infection, with Vincent's organisms predominating, the ulcer was whitish, hard, and friable, and there was marked constitutional disturbance. Spirochaetes and fusiform bacilli were present in large numbers accompanied by various other organisms. (3) In a mixed infection, when Vincent's organisms were only present in small numbers, the ulcer was yellowish and soft, and exuded pus. The constitutional disturbance was variable, and there were a few spirochaetes and fusiform bacilli present among large numbers of other organisms. He had found that the best results were obtained by the use of liquor arsenicalis and 1 in 5,000 perchloride of mercury, alternately, applied by means of a small amount of wool on a wooden applicator or probe. Other conditions caused by spirochaetes were gingivitis and balanitis. Lieutenant Commander Paradice also furnished particulars of two cases of cystitis yielding a coccus, apparently *Staphylococcus albus* of aberrant form; both yielded to treatment with potassium citrate. Two further cases of cystitis yielding coliform bacilli were mentioned; in both these pain had been present in the right iliac fossa, and, later, urinary symptoms arose, thus appearing to support the contention that this form of cystitis was secondary to an inflammatory condition of the alimentary canal, the appendix in particular.

Lieut.-Colonel A. D. CARBERY, C.B.E., V.D. (New Zealand), dealt with some medical aspects of recruiting for war, and analysed the attestation papers of New Zealand recruits in the great war. He considered that the lessons to be learnt from this analysis were the following. Men below the prescribed standards in weight and chest measurement should be classified B3 if otherwise acceptable. The acceptance of C1 men for special training was, he considered, of doubtful value, and they should not be considered fit for service overseas unless they showed a considerable improvement in weight under graduated training. The minimal requirements of physical measurement laid down in the R.A.M.C. regulations for 1923 should not apply to New Zealand soldiers, as there was evidence that their average physique was better than that of British recruits. Attestation forms required remodelling, and the pulse and respiratory rate in relation to exercise should be noted. The nervous, glandular, and genito-urinary systems required a special column in which their condition should be recorded. The ears should be examined in all cases. Medical officers selected for the important work of recruiting for mobilization should be specially trained in peace time. No form of physical inspection of recruits could hope to eliminate all defectives or detect disease tendencies, but, as evidence of the improvement, he instanced the recent reports of the Surgeon-General, which showed that the rejection of recruits after a few months' training had been much reduced by improved methods of examination and greater acumen in selection.

Major W. AITKEN, medical superintendent at Cashmere Hills Military Sanatorium, discussed the after-histories of patients treated at the Military Sanatorium during the years 1919-24. An attempt had been made to determine the post-sanatorium experience of 421 discharged patients and the benefit derived from the treatment. The patients were dealt with under three groups as follows: (1) Cases with slight constitutional disturbances and physical signs of tuberculosis of limited extent—for example, in one lobe only. In the case of an apical lesion in the upper lobe the signs should not extend below the second rib in front, and in the case of lesions other than apical the signs should be limited to an area of equal extent. If present in more than one lobe the signs must be limited to the apices of the upper lobes, and not extend below the clavicle and spine of the scapula. (2) All cases which could not be placed in groups (1) and (3), and with, at most, the whole of one lobe affected. (3) Cases with profound systemic disturbance or constitutional deterioration; with marked impairment of function or with an extent of disease greater than the whole of one lobe; and with grave complications, whether tuberculous or not. With reference to (1), the arrest of the disease secured under treatment was maintained in 83.6 per cent. The percentage at work—72.8—also showed that the sanatorium had played a useful part in rehabilitating tuberculous ex-soldiers for civilian life. In group (2) the percentage with the arrest of the disease maintained was 53.6, and the percentage at work 43.4. It was claimed from the results of this group of cases in the middle stages of a grave disease, such as pulmonary tuberculosis, that the treatment as carried out in the sanatorium had been amply justified. In group (3) the inquiry showed that the inevitable results of late diagnosis were not offset by sanatorium treatment; 75 per cent. of the patients in this group died within one to six years after discharge. In determining the usefulness of the work of the institution, the value to the community of the segregation of highly infective cases had to be indicated, also the nursing care and alleviation of the suffering of hopeless cases, for the provision of which the Dominion Government was responsible.

Squadron Leader A. P. Lawrence, Director of Air Medical Services in the Royal Australian Air Force, read a paper on measures for the protection of the civil population against gas attacks from the air. After dealing with the possibility of attacks with poison gas from the air and the probable nature of the gas used he concluded that the measures for protecting the civil population should comprise: The dissemination of knowledge concerning the effects

of a gas attack and of the precautionary measures to be adopted; the provision of an air raid alarm and of shelter in which inhabitants could obtain protection during and subsequent to an attack; the organization of a service for clearing an area of gas and for dealing with casualities and persons affected; and the military control of this service.

Major KENNETH F. GORDON, New Zealand Medical Corps, read a paper entitled "Work at an advanced dressing station near Crèvecoeur in 1918," and gave an excellent description of his experiences during the operations in the early part of October, 1918.

SPECIAL EVENING DISCUSSION.

THE RELATION OF THE MEDICAL PRACTITIONER TO THE STATE AND THE HOSPITALS.

A special evening meeting was arranged to discuss the relation between medical practitioners, the State, and the hospitals.

Dr. J. NEWMAN MORRIS (Victoria), the opening speaker, took as his subject the part played by the medical practitioner in the prevention of disease. He maintained that in the first place the essential unity of the preventive and curative activities of the medical profession must be realized. Medical practitioners had the first, and consequently the best, opportunity of taking or advising steps for prevention. The importance of prevention was not sufficiently emphasized in the medical curriculum, hence it was essential to stimulate the interest of the practitioner in preventive work, and to educate public opinion. No opportunity should be lost of publishing the facts of disease prevention, giving advice, and teaching. This could be effected by service on committees, such as those of baby welfare centres, in municipal bodies, and in Parliament, or by giving lectures on prevention under the auspices of the British Medical Association. Systematic examination of the apparently healthy was to be encouraged, as, for example, by a yearly overhaul to detect disease in its earliest stage. In the prevention of disease certain legal obligations had already been imposed on the medical profession. The Royal Commissioners had suggested further duties, and it was impossible to forecast all the requirements which might legally be imposed. Conscientious practitioners would be aided, while the dilatory and slack would be revealed. Dr. Morris described various ways in which practitioners could aid preventive medicine, and also ways in which the State could, scientifically and financially, help practitioners—such, for instance, as the provision of accessible diagnostic laboratories and granting increased fees for statutory duties.

Dr. M. H. WATT (New Zealand) said that the State took a very active interest in the prevention and treatment of disease, and was watched with suspicion by the private practitioner, whose orbit lay between the consulting room, the patient's home, and the hospital. In all three places he could be an active force in preventive medicine, and the activities of the State in each place would be in inverse proportion to his own. Dr. Watt advocated periodic overhaul of the general public, dealing with the whole family as well as the case in infectious diseases, and the provision of paying wards for private patients in hospitals, as being measures worthy of the medical practitioner's immediate attention. The practitioner was advised to make free use of the hospital when confronted with difficult cases requiring elaborate equipment for diagnosis, and also as meeting places for mutual clinical instruction and education. The ideal was that the practitioner should function as a medical officer of health, interested as much in the prevention of disease as in the cure and care of the patient.

Mr. R. J. LOVE (Victoria) remarked that at present the indigent sick obtained ample hospital accommodation and facilities for treatment, where the best of medical attention was given freely and ungrudgingly, but the community was drifting towards general dependence on free medical treatment. There was a constant growth, both actually and proportionately, in the numbers of people who took advantage of free public hospital treatment, and who were not wholly to blame, since it was natural for people to go where the best service was obtained at the least cost. To counteract this tendency the facilities for treatment should be widened, and grades of hospitals established corresponding, as regards cost, with the respective grades of society, working always towards the community hospital system. Mr. Love viewed the community as consisting of four classes, and described hospitals to suit each—namely, private, intermediate, third class, and public or free class. He explained how both hospitals and medical practitioners could help in the evolution of such a scheme, and in furtherance of preventive medicine, paying special attention to the departments for periodic medical examination, tuberculosis, and social service. Hospitals should be standardized to meet all preventive as well as curative requirements; all members of the profession should take full advantage of the facilities provided, and co-operate in a vigorous policy of prevention.

Dr. T. MCKIBBIN (New Zealand) agreed that medical practitioners did prevent disease, but considered that it should be their main objective both in town and country. The demand was arising for public health nurses, and for an extension of public hospital activities to include disease prevention; the co-operation of medical practitioners was desirable, but depended on their own attitude. Dr. McKibbin would like to see practitioners definitely allied with the Department of Health and the local governing authorities for the purpose of disease prevention, and believed that the only sound and fair way of reaching that objective was by national insurance, compulsory for all persons in receipt of low incomes, in order to prevent disease. This would improve the lot of the majority of the medical practitioners, and definitely benefit the public health.

England and Wales.

POST-GRADUATE INSTRUCTION AT THE ROYAL NORTHERN HOSPITAL.

THROUGHOUT the year, with the exception of August and September, post-graduate courses are held at the Royal Northern Hospital on Tuesday afternoons at 3.15. The lecture is given by a member of the hospital staff, and some subject is treated in such a way that the practical implications are brought out. No charge is made for attendance, and tea is provided at the conclusion of each lecture. This arrangement has proved to be very popular, the time and the nature of the topics attracting many general practitioners. An "intensive course," which was much appreciated, was held in February; it extended over one week, lectures and demonstrations being given each afternoon. The remainder of the time available in the morning and afternoon was devoted to teaching in the wards and other departments of the hospital. The next "intensive course" will be held from May 23rd to 27th, when special lectures will be given on the diagnosis of pulmonary disease, rectal diseases, the uses of radium in gynaecology, common skin ailments, anaesthesia, modern methods in relation to digestive disorders, visceroptosis, and the diagnosis of diseases of the heart and chest. During the first fortnight in March a course was held for the M.R.C.P. and other higher examinations. A similar course will be held in the second half of June. It will last between two and three weeks and comprise recent advances in medicine, medical anatomy, and points in biochemistry, bacteriology, and general pathology. Further particulars may be obtained from Dr. E. G. B. Calvert, the dean of the Royal Northern Hospital.

INSTITUTIONAL PROVISION FOR RHEUMATIC CHILDREN.

In July last the subcommittee set up by the British Medical Association to inquire into the subject of cardiac disease in children reported[1] that it was clear that the need of rheumatic children for prolonged care was imperfectly realized in the country as a whole. The subcommittee urged the necessity for each large city to be provided with the means for institutional treatment of rheumatic children in the course of which the children

[1] SUPPLEMENT, July 3rd, 1926, p. 1.

could receive controlled rest with plenty of sunlight and fresh air for periods of months. We are glad to learn that the Metropolitan Asylums Board has now made a decided move in this direction. At its meeting on April 9th the Board resolved to provide 350 beds for the treatment of London children suffering from rheumatic diseases, and for this purpose to extend Queen Mary's Hospital for Children at Carshalton. This institution, which is twelve miles from the city, has at present 900 beds for acute tuberculous cases and various non-tuberculous cases requiring active or operative treatment. The new accommodation is to be for children of both sexes, under 16 years of age, who are suffering from subacute rheumatism, the later stages of acute rheumatism, rheumatic chorea, or rheumatic carditis, including recurrent attacks. As the enlargement of the hospital will necessarily take some time, the Board has also decided that 56 beds at another of its institutions, High Wood Hospital for Children, at Brentwood, in Essex, shall be temporarily allocated to meet immediate and urgent requirements. At Carshalton there is already a special unit of 60 beds, provided in the early part of 1926 for the accommodation of children suffering from rheumatic fever, acute endocarditis, or chorea. The establishment of this unit, which followed upon a report by Dr. W. T. Gordon Pugh, the chief medical officer of the children's and surgical tuberculosis services to the Board, was intended primarily for research purposes, and it was clearly understood by all concerned that this was not to be considered as an attempt to deal with the problem of providing accommodation on a large scale for children absent from school through rheumatic illness, except in so far as successful research on this small number of cases, which were to be admitted as early as possible and in the most acute stage of the disease, might tend to reduce the number of such cases. More recently the Board was informed that the Ministry of Health is satisfied that there is urgent need for the provision of additional hospital accommodation for London children suffering from rheumatism, and that if the London County Council requested the Board to provide the necessary accommodation, and the Board agreed to do so, the Ministry would approve. The Board considered the two alternatives of building a new institution specially for the purpose or of extending St. Mary's Hospital for Children. The Board has available a site of 156 acres at Copthorne, near East Grinstead, purchased with a view to a sanatorium for tuberculosis on a scheme which fell through as a result of the war, but after consideration it decided that, owing to the non-availability at Copthorne of essential services, it would be more economical to extend the Carshalton institution, where the present chief officers would be available for supervisory purposes, and where questions of access and housing of staff would present no particular difficulty. The Board had before it a report presented to the London County Council by the county medical officer (Dr. F. N. Kay Menzies), in which it was computed that in the London area not fewer than 10,000 children have suffered or are suffering from rheumatic symptoms. The great majority of these are not in need of any special treatment other than that which they are already receiving, but they require careful watching. About 1,000 of these children, whose hearts have been seriously and permanently injured, attend special (physically defective) schools, and there are from 600 to 700 others who are absent from school for long periods on account of rheumatism. These last represent 25 per cent. of the chronic invalidity among school children, and include all, or almost all, the children for whom the special arrangements now proposed are necessary. In 1925 the number of children reported chronically out of school on account of this disability was 614, of whom 144 were said to be suffering from rheumatism, 224 from heart disease, and 246 from chorea. The incidence of rheumatism appears to be greater generally among girls (65 per cent.), and the high proportion of cases of chorea to the total illustrates the very special incidence on the nervous system in school children.

British Empire Cancer Campaign.

Viscount Cave presided over the quarterly meeting of the Grand Council of the British Empire Cancer Campaign on April 12th. An application by the National Cancer Campaign of Ireland for affiliation to the Campaign was approved. Both Ulster and the Irish Free State are represented in this Irish organization, its membership, including representatives of the Royal Colleges of Physicians and Surgeons in Ireland, Queen's University, Belfast; Trinity College, Dublin; the Royal Academy of Medicine in Ireland; the Royal City of Dublin Hospital; the Royal Dublin Society; and the British Red Cross. Grants of £298 and £900 respectively were made for apparatus and for the upkeep for one year of the radiological cancer research department of the Middlesex Hospital, and a further grant of £3,000 to the general cancer research department at this hospital was approved. The grant of £100 to Mr. E. Nevill Wilmer, of Manchester University, was renewed for one year to enable him to continue work on tissue culture, and a further grant of £300 was made to Professor Charles Walker of Liverpool. The resignation of Lieut.-General Sir John Goodwin was received, and the council tendered him congratulations and good wishes on his appointment as Governor of Queensland. Sir Archibald Bodkin was elected a member of the grand council and executive committee. Sir Richard Garton, chairman of the finance committee, drew attention to the necessity for a sustained effort to obtain adequate annual funds to subsidize the important work in progress in the various cancer research laboratories. It was announced that arrangements for a combined Lancashire and Cheshire appeal were being considered.

Scotland.

Scottish Universities' Parliamentary Representation.

THE nominations of the two candidates for the vacancy in the Scottish Universities' parliamentary representation, as announced in the BRITISH MEDICAL JOURNAL of April 9th and 16th, were duly handed in at a meeting on April 8th, at which Principal Sir J. Alfred Ewing presided as returning officer. He announced that the poll would be held on Tuesday, April 26th, and on the three following days, and that the result would be declared on April 30th. Members of the Scottish Universities' constituency are reminded that voting is carried out by post and that they should immediately fill up the voting paper when received and post it to the returning officer of their respective university.

Infectious Diseases at Dairies.

A circular dated April 13th, 1927, has been issued by the Scottish Board of Health, drawing the attention of local authorities to the provisions of the Milk and Dairies (Scotland) Act, 1914, which deal with infectious disease. The object of the circular is to point out that, in the prevention of tuberculosis and infectious disease due to infected milk, dairymen and their employees can give great assistance and are bound by law to do so. It is believed that if the provisions of this Act were carefully applied by the producers of milk and their employees, milk-borne tuberculosis and such infectious diseases as diarrhoea, dysentery, enteric fever, diphtheria, and scarlet fever would be almost entirely prevented. The circular complains that when a milk supply is suspected of causing disease the attitude of the producer of milk and his employees is too often one of indifference or of actual obstruction, and it alleges that during 1926 several outbreaks of infectious disease were spread by milkers who, themselves infected, continued to milk cows. In one instance about 150 persons became affected by dysentery through a milker breaking the law by continuing to work while suffering from this disease, while in an outbreak of scarlet fever over 150 cases were traced to a milkmaid who continued to milk cows while suffering from a mild attack of the disease. In both essential facts had been withheld from the medical officer of health. The circular advises that certain provisions should be strictly enforced by the local authorities in the public interests. It is pointed out that a dairyman is required to report to the medical officer of health symptoms of infectious disease occurring in any person resident or employed at the dairy or any person residing in the same house as an employee of the dairy.

A dairyman is liable to a penalty if he allows any person to milk cows or to handle milk vessels while suffering from diarrhoea, sore throat, any suppurating sore, or any infectious disease, or if he allows any person to milk cows or handle milk vessels if that person has recently been in contact with a case of infectious disease. Notification is incumbent also on the dairyman if he has in his dairy any cow suffering from a sore on the teats, accompanied by suppuration or bleeding, or from any disease liable to contaminate milk, or any cow giving tuberculous milk. Attention is also drawn to a by-law to the effect that the hands and forearms of milkers and of any persons engaged in handling milk or milk vessels are to be thoroughly washed and to be dried on a clean towel before work is begun. Medical officers of health are advised to take the family doctor along with them in cases where the physical examination of any patient is necessary, and where cases of disease have occurred and there is reason to believe that the origin of the disease is a milk supply. Medical officers of health should also take particular care to control the movements of those who are in attendance on a case of infectious disease at a dairy and to investigate the houses of persons employed in the dairy and examine inmates of such households. Where infectious disease occurs in families supplied with milk by one dairy and where the medical officer of health is reasonably satisfied that the infection is carried by that milk supply, even although after a visit to the dairy the actual source of the outbreak is doubtful, the medical officer of health should make an interim order, but the local authority can make an immediate order stopping the milk supply. A possible alternative for the farmer as an emergency measure is a complete change of milkers and all those who handle milk, together with thorough washing of the cows' udders and disinfection of all utensils and apparatus concerned. The Board of Health suggests that in any case where information has been withheld wilfully the dairyman or the employee or both shall be proceeded against. The local authority is liable to pay to a dairyman full compensation for any loss arising out of the order stopping the milk supply if the damage has not arisen by reason of the dairyman's default, but it is pointed out that this should not deter the local authority from making such an order when stoppage of the milk supply is recommended by the medical officer of health, because inaction of this kind may be false economy.

GLASGOW SLUM CLEARANCE.

Details of an extensive slum clearance scheme were given at a meeting of Glasgow Corporation on April 12th. The estimated cost of the scheme is about £480,000, the annual deficit being calculated at about £17,000, of which the Government subsidy amounts to 50 per cent.; the remaining 50 per cent. represents an addition of one-fifth of a penny per pound to the rates. The number of houses involved is 1,019, and it is intended to house the dispossessed tenants in various new areas where the corporation is at present erecting houses. The largest area involved in the scheme is in the Bridgeton district.

Ireland.

MEDICAL REGISTRATION IN THE FREE STATE.

IT is stated that on the reassembling of the Dail after the Easter recess a bill will be introduced settling permanently the question of medical registration. It is believed the bill will provide that the General Medical Council as at present constituted will control medical education in Ireland substantially on the lines of the present system, and that newly qualified medical men in the Free State will continue as hitherto to occupy the same position in the *Medical Register*. For disciplinary and purely local affairs in the Free State it is believed that an agreement has been reached between the British and Free State Governments for the establishment of a Medical Council and Register in the Saorstat. All medical practitioners who desire to practise in the Free State must have their names in the Medical Register of the Free State. The bill will also provide for reciprocity between Great Britain and the Dominions and the Irish Free State.

SCHOOL MEDICAL SERVICE IN BELFAST.

A scheme of school medical service has been adopted by the Belfast Corporation on the advice of the Education Committee. It is estimated to cost over £9,000 a year. The city will be divided into three districts, each with a clinic and staff. In addition to the medical officer of health, who will supervise the scheme, the staff consists of a chief medical officer, at a salary of £750 a year, and three doctors as assistants, one of them a woman, who receive £500 each, and a part-time woman doctor at a salary of £250. The part-time service of a specialist (twelve hours a week) has been retained for the central clinic at £500 a year. In addition, there is an eye specialist and an aurist for the branch clinics (part-time) at £210 a year each, and four part-time dentists at £200 a year each. There are fifteen nurses, with salaries ranging from £109 to £131 each, and this number will be increased when the new central clinic and operation department is fully organized. There are, in addition, three clerks, messengers, and caretakers for the clinics, and several women, described in the scheme as "head-cleaning women," whose duty it is to deal with specially bad verminous cases. The staff is divided over the three clinics. In the forenoons they carry out inspections in the schools, and in the afternoons are in the clinics to deal with any cases requiring treatment. There are 65,000 children attending the elementary schools in the city. As it would not be possible to examine all these children every year with the present staff they are arranged in age groups, and it is proposed to examine them at 6 years of age (entrance group), at 8 years, and at 12 years (leaving group). In this way, whether there is anything wrong with the children or not, each will be completely examined three times during the course of their elementary school career. Before the periodical visits of the doctor the teachers and pupils are notified, and any child in the school not included in the particular age group to be examined is examined specially, if, in the opinion of the principal or parents, this is necessary. Children found defective at a previous examination are re-examined to ascertain whether treatment has been obtained, and with what result. A feature of the school medical inspection is the interest taken in it by the parents, a great many of whom come to the schools on inspection days, and are present in the private room with the doctors and nurse when their children are being examined. Many defects not previously noticed are discovered at these inspections, especially in regard to eyes, ears, and throats, and the parents always seem anxious to listen to the opinion of the doctors and have their advice carried out. Children requiring more detailed examination and treatment are referred to the clinics. At first there was some protest among the parents at the inspections for cleanliness, especially when children were sent home with instructions to have their heads washed with chemicals prescribed by the doctors and nurses, but this has now disappeared, and all the parents, realizing that it is in the best interest of the children, endeavour to conform to the instructions. There has been a marked improvement in the cleanliness of the children, and also a steady improvement in their health. All the children attending the schools are examined periodically by the school nurses in respect of cleanliness.

Correspondence.

MIGRAINE.

SIR,—As the subject of migraine is receiving much attention in your pages a note on the following case may be of interest.

Some years ago I had under my care a severe case of migraine. The patient was a lady in early middle life. She was of somewhat fragile physique and artistic in her tastes and aptitudes. Her husband was head of a great public school which gave nine or ten weeks' holiday in summer. The patient and her husband were both fond of travel and went abroad nearly every summer, often to South Europe. She never had an attack while travelling.

This case gives some support to the usual view that

migraine is essentially a neurosis. Change of climate and environment, relief from domestic cares, the stimulation of new scenes, and fresh interests served to prevent the attacks.—I am, etc.,

Belfast, April 12th. J. A. LINDSAY, M.D., F.R.C.P.

VENESECTION.

SIR,—In your issue of April 16th (p. 721) there is reported a discussion on the subject of venesection which raises some very important points. I am, however, struck by the absence of any statement regarding experimental blood-letting, except that by Mr. French to the effect that physiologists consider the procedure useless. This statement owes its origin to faulty experimentation.

The facts are that, although venesection only reduces arterial pressure for a short period, the arterial recovery is largely due to a compensatory action on the part of the vasomotor system. Evidence that pressor fibres pass up the vagus has been put forward by me, and has been confirmed by Anrep and Starling. As a result of the contraction of the peripheral vessels to keep up the arterial pressure, there is brought about a profound fall of venous pressure which is relatively lasting and which must be of enormous value in relieving the right side of the heart.

In my recent volume *Clinical Physiology in Relation to Modern Diagnosis and Treatment* I have stated the circumstances in which venesection is indicated on physiological grounds, but when the fall of venous pressure is appreciated it will readily be seen how many of the conditions referred to by various speakers in the discussions will be relieved.—I am, etc.,

R. J. S. MCDOWALL, D.Sc., F.R.C.P.Ed.
King's College, London, April 16th. (Professor of Physiology).

PATENTED RESEARCH.

SIR,—There has recently come into my hands a letter from a German firm—the Edelweiss Milchwerk—advertising a dried milk which has been irradiated with ultra-violet light to increase its antirachitic potency. This milk they name "Ultractina," and they state that "a letters patent has been applied for in all States." Whether or not a patent has been granted them in this country I do not know, but I understand this is not the first patent applied for in this connexion.

H. Steenbock and A. Black (*Journ. Biol. Chem.*, 1924, lxi, p. 405) and A. F. Hess (*Science*, 1924, lx, p. 269) were the first to demonstrate that exposure to ultra-violet light will render certain foodstuffs powerfully antirachitic. Since that time there has been a great mass of work carried out on this subject, a large share of it by investigators in America and Great Britain, leading up to the discovery by Rosenheim and Webster that ergosterol by irradiation can be rendered a more powerful antirachitic than any other substance known (BRITISH MEDICAL JOURNAL, March 12th, 1927, p. 485). Can a firm having no connexion with the original work on irradiated foods patent irradiated dried milk? If so, there appears no logical reason why irradiated ergosterol should not similarly be patented for commercial exploitation by such a firm.

It has been an honourable tradition among members of the medical profession, as well as many other scientific workers, that all advances in knowledge gained by them should be freely available to all—and this in spite of the straitened circumstances of so many research workers. Surely if the discoverers are to forgo all pecuniary reward it is all the more incumbent on the State to prevent the patenting of their results by firms whose interest therein is commercial. If this is not done is it not probable that many investigators will follow the example set by the Drs. Dick?

I understand that the granting of a patent can be opposed by an interested party on the plea of previous publication, but is it likely that all those interested will learn in time of the application for a patent? And, moreover, is it not adding injury to insult to place the onus of opposing the patent in the public interest on the shoulders of the original discoverers?—I am, etc.,

London, W.1, April 3rd. H. M. M. MACKAY.

SOME POINTS ARISING OUT OF RECENT VACCINATIONS.

SIR,—Having recently, as public vaccinator to the Ormskirk Union, completed a series of nearly 3,300 vaccinations during the late outbreak of small-pox in Southport, I think a few observations would be of interest.

The area of skin chosen for vaccination was cleansed with spirit and the lymph expressed on to the lancet, previously sterilized by being passed through the flame of a spirit lamp. Four minute scarifications were made in the epidermis, no blood being drawn, the distance apart varying with the area available for vaccination. A circular pad of boric lint completed the operation. The patient was advised to keep the bowels freely open with saline aperients; he was visited again at the end of a week, when an antiseptic and sedative dusting powder was applied to the pocks and a fresh boric lint dressing adjusted.

These vaccinations were carried out in January and February, a time of year when the health of the populace is depressed, yet in spite of this it was only necessary for me to revisit five cases. The first was a girl who stood up in a shop all day and who insisted on being vaccinated on the leg. The second was a woman, aged 45, who had a reaction for a couple of days, simulating influenza. The third was a boy of 12, who had sickness and slightly raised temperature for a couple of days. The fourth and fifth were mental, as the vaccinations had not even taken. There were one or two cases of malaise, which a day in bed soon corrected and the parents thought too mild to require my attention.

There were, of course, a few cases of work and school dodgers, in some of whom vaccinations had not even taken. Four cases came to the surgery as the pocks were delayed in healing, the protective scabs having been knocked off, which was easily understood as they all used their arms vigorously, being cleaners, etc.

In several instances, in homes from which a case of small-pox had been removed, the remainder of the inmates proved insusceptible to vaccination. In one house seven were insusceptible, whilst across the road, in a house where no case of small-pox had occurred, all the scarifications formed pocks. In one house where a case of small-pox had occurred I vaccinated three persons and omitted a fourth; none of the vaccinated showed any reaction, but the unvaccinated at the end of a week developed small-pox and had to be removed.

It is advisable for all vaccinated persons to keep their bowels well open with saline purgatives, as no other substitute seems to eliminate toxins so thoroughly. This was peculiarly noticeable at the school clinic, when I was able with unerring accuracy to pick out those who had disregarded the advice given—as regards the regularity of the bowels and of taking a saline purgative—owing to a slightly greater inflammation surrounding the pocks. A primary vaccination in an adult gave a more severe reaction than in a young person. Spare and thin people stood vaccination better than the plump and full-blooded; in fact, a well filled arm will only stand one or two scarifications.

For ladies, to whom any visible scarring is abhorrent, the method advocated by H. Goldberger gives excellent results. In this the vaccination is performed on the inner and back side of the arm. This, however, is only applicable to patients who will carefully keep the intervening pad between the arm and the chest so as not to allow of any secondary vaccination.—I am, etc.,

Southport, April 12th. G. GORDON RIGBY.

CERTIFICATION OF THE INSANE.

SIR,—I would supplement the letter of Dr. Daunt (BRITISH MEDICAL JOURNAL, April 16th, p. 745) with further quotations from the same source—namely, the *Times* report of April 1st of de Freville *v.* Dill, before Mr. Justice Avory and a special jury.

Mr. Singleton: If a doctor finds a patient raving, if in his presence she assaults one or more persons, and threatens to kill one or more persons, is it not his duty to send for the police and the relieving officer?

Dr. Hyslop: No; he should send for nursing aid . . .

Dr. Risien Russell said that facts communicated by others should not be used without confronting the patient with the person

making the statement. In cross-examination, Dr. Russell said that "even if Dr. Dill saw and heard her threaten to kill her husband, he ought to have confronted her with her husband."

I would invite the above experts to state whether or no they are correctly reported. I would also invite other experts to comment on the opinions herein set forth. —I am, etc.,

Chichester, April 15th. G. C. GARRATT.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

IN the House of Lords, on April 12th, the Royal Assent was given to the Sale of Food and Drugs Act and other Acts. The House rose till April 28th. The House of Commons stands adjourned till April 26th.

Shops Acts.

The Departmental Committee which is inquiring into the Shops Acts of 1920 and 1921 heard further evidence on April 13th, at the Home Office. Evidence in favour of the Act of 1920 being made permanent was given by witnesses from the Drapers' Chamber of Trade. Mr. Austin Fudge, a draper of Earlsfield, S.W., said that the early closing hours, in view of the Summer Time Act, had proved a blessing to thousands of young women shop assistants. Sir Herbert Ormond, chairman-elect of the Executive Council of the Drapers' Chamber of Trade, expressed the opinion that all shops, with very few exceptions, such as those for the sale of medicine and surgical instruments, ought to be closed at 8 o'clock. Mr. J. R. Leslie, general secretary of the National Amalgamated Union of Shop Assistants, Warehousemen, and Clerks, said that in the judgement of the union anything which would increase the working hours of those engaged in shops would lower the standard of physical efficiency of shop workers and their children. The witness submitted a schedule dealing with closing legislation in the Dominions and in foreign countries. This showed that in New South Wales pharmacists and chemists were brought within the regulations, and closed at 7.30 on ordinary nights, with one day at 1 o'clock and one night at 9 o'clock. In Denmark during prohibited hours only certain scheduled articles could be sold from chemists' shops. The committee adjourned until April 27th.

Notes in Brief.

Sir Austen Chamberlain is not aware that the Soviet Russian Government has indicated its willingness to renounce preparation of poison gases provided other countries do likewise.

In 1926, excluding lunatics in asylums, 1,283,801 persons were receiving Poor Law relief in England, and 222,719 in Wales and Monmouth.

Mr. Chamberlain states that in England and Wales, in 1926, there was spent on additional benefits under the National Health Insurance Act £1,146,700 for dental benefit, £155,900 for ophthalmic treatment, £228,800 for treatment in hospitals, £43,400 for treatment in convalescent homes, and £33,900 for surgical appliances, besides smaller sums for other purposes.

Alluding, on April 14th, to a remark by the Hammersmith coroner that legislation should be introduced to prohibit the sale of poison such as crude carbolic acid by hawkers in the streets, Sir W. Joynson-Hicks said the retail sale of crude carbolic was already restricted under the Poisons and Pharmacy Act, 1908.

Obituary.

A. STANFORD MORTON, M.B., C.M., F.R.C.S.,

Consulting Surgeon, Royal London Ophthalmic Hospital.

WE regret to announce the death of Mr. Andrew Stanford Morton, who was for many years a well known London ophthalmic surgeon and an outstanding figure among his colleagues throughout the country. He retired from practice in 1920, and went to reside in Clifton, where he had relatives. He died on April 11th at the ripe age of 79 years. He graduated M.B., C.M.Ed. in 1874, and then went to University College, London. He became M.R.C.S. in that year and F.R.C.S. in 1888. He early turned his attention to ophthalmology, and became surgeon to the Royal Eye Hospital in Southwark; later he joined the staff of Moorfields, where he worked for many years, ultimately becoming one of its senior consulting surgeons; he also held the office of ophthalmic surgeon to the Great Northern Hospital. Morton—for no one ever spoke of him by any other designation—was best known for his ophthalmoscope, which it is safe to say that nearly everyone has used or uses. The basis of his well known instrument was the invention of Couper. The peculiarly ingenious magazine of lenses, set freely in their case, but capable of being moved in turn beneath the sight-hole by the geared wheel, was the fruit of Couper's desire to provide an ophthalmoscope that would be a perfect and complete instrument for the estimation of refraction. That was before the days of retinoscopy. He attained his object; his instrument was a brilliant success, but it was so large and costly that few could or would possess it. Morton cut down the magazine to modest proportions, added an adapter that made up for the loss of many lenses, and, later, a double nose-piece arrangement of mirrors that we believe was a device taken from the microscope by Lindsay Johnson. The instrument thus completed has held the field ever since, even though adapted to an electric installation. Part of its success was due to the excellence of its manufacture, and it is of interest to note that British-made instruments are still a good deal superior to foreign-made ones.

Morton was chiefly a clinician. His careful precision in work was remarkable. His judgement in observation was associated with his power of delineating what he saw, for he was a first-class draughtsman, and could produce a fundus drawing that would have done credit to a professional artist. He was a tall man of dignified mien, slow of speech, not given to writing much, but a clinician whose judgement was of singular weight. He was for many years a member of the British Medical Association, and at the meeting of the Association held at Swansea in 1903 he read a paper on the operative treatment of conical cornea which was a perfect piece of work. The honour of office came to him, though he cared little for these marks of recognition. He served as vice-president of the Ophthalmological Society of the United Kingdom, and was for years a member of the Medical Society of Edinburgh. The Order of Chevalier of the Crown of Italy had been bestowed upon him for his professional services. His half-brother is Mr. Charles A. Morton, Emeritus Professor of Surgery in the University of Bristol.

JAMES MAXTONE THOM, M.B., C.M., D.P.H.,

Late Medical Superintendent, Glasgow Royal Infirmary.

DR. J. MAXTONE THOM, lately medical superintendent of the Royal Infirmary of Glasgow, has, to the deep regret of his many friends, not long survived his retiral from office. Dr. Thom was born in the town of Crieff in Perthshire in 1863. After graduating in medicine in the University of Edinburgh and taking the Diploma in Public Health at Glasgow he became medical officer of health for Auchterarder and Logiealmond, adjacent to his native burgh. When he had held this charge for six years he went to Glasgow to be medical officer of Barlinnie Prison and consulting medical officer of Duke Street Prison. In May, 1902, he was appointed medical superintendent of the Glasgow Royal Infirmary. He discharged his duties there with much acceptance for twenty-three and a half years, with one exception the longest tenure on record since 1838, when the post of superintendent was first established.

The period covered by Dr. Thom's term of service was one of the most momentous in the history of the Infirmary, including as it did the years of reconstruction and the problems created by the great war. In course of the reconstruction the whole Infirmary was built anew, the old buildings being completely replaced by a well equipped modern edifice. It is speaking evidence of Dr. Thom's unfailing tact and competence that this transformation was methodically carried through without any interruption in the normal services of the Infirmary. On the declaration of war Dr. Thom turned from these tasks to face new cares and anxieties. Throughout the whole of the grim-visaged time he played his part as superintendent with courage and high devotion, at a personal cost which in the end wore down his health and led to his resignation from office on December 31st, 1925. It was the hope of all that his release from active work might in great measure restore his strength and enable him to enjoy his well earned retirement for a number of years. Fate, however, had otherwise determined. He died on March 23rd last in a nursing home in Glasgow.

Temperamentally Dr. Thom was thoroughly suited for the charge which formed the chief work of his life. He was genial and kindly of disposition, and was gifted with the faculty of understanding, than which there is none more helpful to an administrator. He knew his hospital and his

people well. He enjoyed the esteem and confidence of his governors and the friendly regard of the members of his medical and surgical staff, who were always assured that in his conduct of affairs he was inspired by a wish to meet the reasonable requests of all in the best interests of the Infirmary. His life was too full for any other public service than that the Infirmary claimed of him. The recreations of his leisure were fishing and golf. He is survived by his widow and a married daughter. His name will long be remembered with affection in the institution which he served so long and faithfully.

PROFESSOR DAVID MACEWAN.

WE regret that there was an error in the obituary notice of Professor David MacEwan of Dundee, published on April 9th (p. 703). It should have been stated that, at the Annual Meeting in Carlisle in 1896, he opened the discussion on hypertrophy of the prostate. The address in surgery was delivered by Dr. Roderick Maclaren, senior surgeon to the Cumberland Infirmary, Carlisle. It dealt with preventive surgery.

A Reuter's telegram from Capetown announces the death of Sir EDMOND STEVENSON, F.R.C.S.Ed., formerly president of the Medical Council, Cape Colony, of the Cape Branch of the British Medical Association, and of the South African Medical Congress. We hope shortly to publish a notice of his career.

The death is announced, in his 90th year, of Dr. ROBERT FULTON WEIR, at one time professor of surgery in the College of Physicians and Surgeons, Columbia University, New York; he was elected an honorary Fellow of the Royal College of Surgeons of England in 1900, in the first batch of such Fellows to be chosen.

Medico-Legal.

LUNACY CERTIFICATION.

DE FREVILLE *v.* DILL.

THE Court of Appeal, consisting of the Master of the Rolls, Lord Justice Scrutton, and Lord Justice Sargant, on April 11th dismissed an application by Mr. J. W. J. Cremlyn, on behalf of Mrs. May de Freville, the plaintiff in the action against Dr. A. V. Dill of Stroud—reported in the BRITISH MEDICAL JOURNAL of April 9th, p. 705—to have the jury who had been discharged by Mr. Justice Avory because they had formed a premature opinion adverse to Dr. Dill re-summoned and re-empanelled to hear the rest of the evidence.

Mr. Cremlyn, in making the application, said he had called fourteen witnesses for the plaintiff, and had closed her case, and the defendant had finished his evidence-in-chief and had been cross-examined for about an hour and a half when, the cross-examination not being completed, the foreman of the jury asked Mr. Justice Avory whether the jury could stop the case. The judge replied: "It depends entirely what views you take as to the evidence." The judge then told the jury to put their message to him in writing. The foreman did so, and handed it to the judge, who said that it was a finding by the jury that the defendant had been negligent, and returning a verdict for the plaintiff. Mr. Singleton, the leading counsel for the defendant, made no application for the jury to be discharged, but said that he could not consent to judgement in the circumstances. Thereupon the judge said that the proper course for him to adopt was to discharge the jury, as they had given a verdict without hearing material evidence for the defendant. The foreman said the jury had simply asked for advice, and had taken the advice given to put their opinion in writing. Mr. Cremlyn submitted that the judge was only entitled to discharge the jury if he had come to the conclusion that they had misconducted themselves, and had formed a dishonest, or corrupt, opinion.

Counsel for the defendant were not called on to argue.

Application Dismissed.

The Master of the Rolls, in his judgement dismissing the application, said the words used by the jury went far beyond a mere indication of a view passing through their minds. They were only consistent with an intention to stop the case without having heard the rest of the evidence for the defendant. It was plain that such a verdict must be bad. It was contrary to the oath taken by the jurors themselves well and truly to hear the case and to decide it in accordance with the evidence. That meant the whole of the evidence, and not a part only of it. The intervention offended against the basic principles of justice. Mr. Justice Avory had exercised his discretion quite correctly, and he (his lordship) would be very sorry to say anything which might have the effect of limiting or impairing the discretion of a judge to discharge a jury in similar circumstances. The application must be dismissed with costs.

Scrutton and Sargant, L.JJ., gave judgement to the same effect.

Universities and Colleges.

UNIVERSITY OF LONDON.

A COURSE of three lectures on "The menstrual function, its physiology and pathology," will be given by Professor H. Beckwith Whitehouse at the London (Royal Free Hospital) School of Medicine for Women, Hunter Street, W.C.1, on Mondays, May 16th, 23rd, and 30th, at 5.30 p.m. Admission to the lectures is free without ticket.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN ordinary comitia of the Royal College of Physicians of London was held on April 11th at 5 p.m., the President, Sir John Rose Bradford, being in the chair.

The President delivered his annual address, in which he reviewed the work of the College during the past year. He pointed out that there are now 379 Fellows. There was a considerable increase in the number taking the membership, the total number of Members now being 836, as against 732 a year ago. He mentioned the honours conferred by the King upon Fellows, Members, and Licentiates of the College, and alluded to the gifts made to the College, including that from Colonel Sir Douglas Powell, Bt., of a replica of the portrait of his father, Sir Richard Douglas Powell, a former President, painted by Mr. Spencer Watson. Mention was also made of the revision of the by-laws during the past year, and special reference was made of the power that the College now assumed of granting Honorary Fellowships in special circumstances.

The President then delivered obituary addresses upon the career and work of the fifteen Fellows who had died in the past year, including Dr. E. S. Reynolds, Sir John Williams, Sir W. B. Leishman, Sir F. W. Mott, Dr. John Thomson of Edinburgh, Dr. J. G. Adami, Dr. Thomas Claye Shaw, Sir Isambard Owen, and Dr. Thomas R. Bradshaw.

Sir David Ferrier, the Senior Fellow present, then proposed a vote of thanks to the President.

Sir John Rose Bradford was re-elected President for the ensuing year.

Diplomas in Tropical Medicine were granted, jointly with the Royal College of Surgeons, to the following twenty-four candidates who had passed the required examination:

S. Annecke, E. G. Anthonisz, A. C. L. Ó'S. Bilderbeck, Catherine V. Burne, N. P. Dalal, T. B. Gilchrist, R. D. Gross, Kathleen M. Halloran, R. G. Keays, H. H. W. Kumm, F. R. Lockhart, A. D. Loganadan, P. H. Martin, F. R. L. Miller, Margaret M. Nolan, J. Portelli, Helen M. Russell, E. G. Sayers, H. M. Shelley, Viva E. K. Stuart, H. S. Townsend, Bertha Williamson, C. J. Wylde, W. A. Young.

Medical News.

AT the annual meeting of the Tuberculosis Society, held at Somerville College, Oxford, Sir StClair Thomson was elected president, and the council was instructed to consider the constitution of the society and to recommend alterations if necessary.

AS a sequel to Sir Berkeley Moynihan's broadcast talk on Lord Lister from the Leeds-Bradford station of the British Broadcasting Corporation on April 8th, Sir Charles Hyde has endowed a bed in the following five Birmingham hospitals: General, Queen's, Children's, Orthopaedic, and Women's.

AMONG the Chadwick Public Lectures to be delivered this session is one by Sir Thomas Legge, C.B.E., M.D., on the teaching of industrial medicine. It will be given on Tuesday, May 3rd, at 5.15 p.m., in the house of the Medical Society of London (11, Chandos Street, Cavendish Square, W.), and Dr. S. Monckton Copeman, F.R.S., will be in the chair. Admission is free.

THE annual meeting of the Medical Mission Auxiliary of the Church Missionary Society will be held at the Central Hall, Westminster, on May 4th, when Bishop H. Gresford Jones (late of Kampala) will take the chair at 7.30 p.m. The speakers will include Dr. A. R. Cook, C.M.G., from Mengo, Uganda, and Dr. D. Duncan Main from Hangchow, China. Tickets of admission can be obtained from the Superintendent, Loan Department, Church Missionary Society, Salisbury Square, E.C.4.

DR. EDWARD MAPOTHER, Medical Superintendent of the Maudsley Hospital, Denmark Hill, S.E.5, will give a series of five clinical demonstrations at the hospital on types of mental disease, on Wednesdays, at 2.30 p.m., beginning on April 27th.

THE Langley prize of the London School of Hygiene and Tropical Medicine is now open to competition among officers of the West African Medical Staff, whether on the active or retired list. The prize, founded in memory of Dr. W. H. Langley, C.M.G., P.M.O. Southern Nigeria, is awarded every three years; the first award was made in 1924. It is given for the best paper on tropical medicine or surgery, hygiene, or epidemiology and parasitology. It is of the value of £30. The papers in competition must be received by the Secretary of the London School of Hygiene and Tropical Medicine, Malet Street, London, W.C.1, on or before October 1st.

THE Ministry of Health has amended the regulations in connexion with the use of preservatives in food, which came into operation on January 1st. The manufacture for sale of an article of food containing any preservative introduced by the use of preserved bacon, ham, or margarine is now prohibited, and the restriction on the use of sulphur dioxide is slightly modified. In a circular (732) attention is called to the Sale of Food and Drugs Act, 1927, which gives effect to the recommendation of the Departmental Committee on Preservatives and Colouring Matters in Food that any prohibitions or limitations imposed by the regulations should bind the Courts in proceedings taken under the Sale of Food and Drugs Acts. Previous references to the regulations dealing with preservatives in food appeared in our issues of August 22nd, 1925 (p. 349), and January 8th, 1927 (p. 70).

APPLICATIONS for the Moorfields Research Scholarship of the value of £50 a year must be sent to the Dean of the Royal London Ophthalmic Hospital, City Road, E.C.1, by May 15th. The successful candidate will conduct clinical research at the hospital.

THE date of opening of the eighth Salon des Médecins at Paris has been postponed to May 22nd.

BOOTS PURE DRUG COMPANY, LTD., are extending their research work at Nottingham, and have appointed as head of the research laboratories Dr. F. L. Pyman, F.R.S., professor of technological chemistry in the University of Manchester and in the College of Technology. A primary object of this new development is the prosecution of fundamental research in the domain of chemotherapy. Professor Pyman is well known for his investigations into the chemistry of the alkaloids and of synthetical compounds closely related to them; recently he has devoted much attention to the glyoxaline group, and has effected a synthesis of one of the most important members of the series—namely histidine, a structural unit of certain protein molecules.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the BRITISH MEDICAL JOURNAL must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the BRITISH MEDICAL JOURNAL are *MUSEUM 9861, 9862, 9863,* and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:

EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westcent, London.*

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The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

QUERIES AND ANSWERS.

DELIVERY IN CONTRACTED PELVIS.

"A. K." asks for advice in the conduct of the following case: A woman, then aged 25, had her first child three years ago. The presentation was a breech; each hand had to be brought down and forceps applied to the after-coming head. The child, though small, was dead. The next year she had an abortion at two and a half months, when it was found quite impossible to get an ordinary-sized hand through the pelvic brim to evacuate the ovum from the uterus. Now she is six months pregnant again. She does not like the idea of waiting for a possible Caesarean section, but has no objection to induction of premature labour. What would be the period at which to act and by what method? The use of bougies is rather risky in the circumstances.

*** A patient giving a history as outlined by our correspondent requires the most careful attention, preferably from an expert and in a hospital. The pelvic measurements must be accurately estimated to form an opinion as to whether a *viable* child is possible *per vias naturales*. Caesarean section at term seems the best—in fact, the only reasonable line of treatment for the safety of both mother and child, because the pelvic brim has been found too small to allow the passage of a normal-sized hand. This treatment could be justifiably insisted upon by the patient's medical attendant. If a Caesarean section is absolutely refused, then the only alternative is the induction of premature labour at a time when the foetal head will only just enter the brim of the pelvis. If that time is reached earlier than the thirty-sixth week of pregnancy, then induction is contraindicated in the interests of the child. Should induction be insisted upon, then there is no serious objection to Krause's bougie method.

ATONY OF THE COLON.

"N. A. M." asks for suggestions for treatment for complete atony of the colon. Eserine gives rise to pain without evacuation, and no result is obtained from the usual purgatives; enemas give only indifferent results. Laparotomy was performed, but beyond general laxity and ballooning of the pelvic colon, nothing abnormal was found.

INCOME TAX.

Succession to Practice.

"A. B. C." sold his practice to F. as from May 1st, 1926, the arrangement providing for a six months' partnership, on a basis of equal shares, ending at that date. He has been assessed on a cash basis for many years and has supplied figures accordingly for the period expiring March 31st, 1926, but has since been asked for a separate statement of the partnership profits for the six months to April 30th, 1926.

*** So far as the year 1925–26 is concerned, "A. B. C.'s" gross liability would be determined by (1) the "average" assessment for seven months *plus* (2) one-half of the average for five months—that is, it would be represented by $(\frac{7}{12} + \frac{5}{24} =) \frac{19}{24}$ of the assessment. His personal allowances, etc., would be deductible from that amount. For the month of April his liability would be fixed by one-half of one-twelfth of the "average" assessment, and the average would be affected to some extent by the earnings during the six months' partnership. It may be for that reason that the latter figures were required, but there is another possibility. If the profits of the partnership—which technically "succeeded" to the sole practice—fell short from some specific cause since or by reason of the succession, "A. B. C." and his partner would be entitled to have the assessment for that period reduced to the actual amount of their earnings. But it should be borne in mind that the cash basis would not be applicable unless the receipts from pre-partnership debts were brought into the partnership earnings.

Old Book Debts.

"FOGGED" sold his practice on April 1st, 1926, buying another as from January 1st, 1927, after a quarter's introduction on a half-share basis. Has he to include in his return any cash he is receiving in respect of his former practice?

*** As for the year 1926–27, our correspondent has ceased to carry on his former practice and is not assessable in respect of any sums he may receive from it; they represent capital in the form of past book debts. The basis of computation of liability in respect of his new practice appears to be correct.

LETTERS, NOTES, ETC.

RHEUMATIC INFECTION IN CHILDREN.

DR. T. M. ALLISON (Newcastle-on-Tyne) writes: The second report on juvenile rheumatic infection is based upon and deals with the following aspects: (1) a micro-organism, (2) tonsillar infection, and (3) environment. There is, in my opinion, an unnamed fourth factor—namely, *mouth-breathing*. The mouth is to eat bread-and-butter with; the nose is to breathe through. I have rarely, if ever, seen rheumatism except in a mouth-breather, and one can almost always elicit a history of snoring. Mouth-breathing accounts for tonsillar infection; it dries and prepares the tonsils for the inhaled organism, and it accounts for the influence of dampness and the cold air of the bedroom making the arthritic pains worse, in spite of the rest and the warmth of the bed. In your leading article in the BRITISH MEDICAL JOURNAL it is stated that the second report "deals rather with treatment than with prevention." May I suggest that the prevention of rheumatism in childhood lies in the prevention of mouth-breathing, and that in adults (where operation may be futile) that it lies in the use, especially at night, of a carbolic mouth-wash?

CORRECTION.

IN the report of the meeting of the South Wales and Monmouthshire Branch in the issue of April 16th (p. 721), Dr. Emil Goetsch should have been described as "of Brooklyn," and in the last sentence "solid shadow" should have read "heart shadow."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 40, 41, 44, and 45 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *164*.

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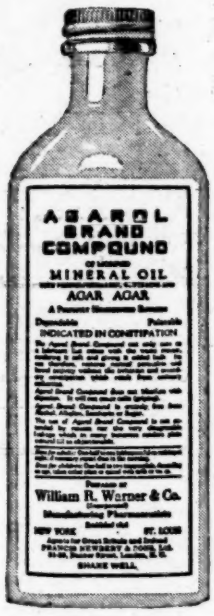

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